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U.S. CHAUDHARI

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Editor :
SUTINDER SINGH

Peace Education
Beating Swords into Plowshares

U.S. Chaudhari*

In the eighteenth century, Voltaire wanted to know the steps by which men passed from barbarism to civilization. In my opinion, perhaps, the major step taken by men, in this respect, was to accept the value of peace and harmony in the society to promote 'cultural creation' or civilization. In fact, civilization begins where chaos and insecurity end. "For when fear is overcome" says Will Durant (1954), "curiosity and constructiveness are free, and man passes by natural impulse towards understanding and embellishment of life." Although, barbarism does not appear in that ferocious form in the modern times, yet it continues to inflict the humanity through deprivation, discrimination, segregation, domination and violation of human rights.

Man differs from the beast only by education. Through civilizing influence of various socializing and educating institutions, greed is transmuted into thrift, violence into argument, murder into litigation and suicide into philosophy (*Durant*, 1954). Thus, man's propensity for violence can be transformed into non-violent disposition leading to the rule of law, order, peace and compassion in the society. To have a peaceful, affectionate and sane society, we must strive to create a culture of non-violence in all organizations and institutions. Non-violence is a power which can be enjoyed equally by all — rich and poor and weak and strong. Literature on non-violence suggests that the concept of non-violence has at least eight components : peace, equality, fearlessness, humility, love, self-control, truth and tolerance. Of course, these components are not exclusive of each other, and peace appears to be a major part of non-violence.

Peace is a vital part of our collective consciousness. It is an attitude towards life which, by restraining violence, strengthens social cohesion and makes the life worth living. Peace is not a thing that we can achieve at some point and neglect it thereafter. As a matter of fact, peace today has come to be treated as a pre-condition of survival, growth and development. The way to peace is not through weakness. "We do not fight violence" says Mahatma Gandhi, "so much as weakness. Nothing is worthwhile unless it is strong. Neither good nor evil. Absolute evil is better than emasculated goodness. Moaning pacifism is the death-knell of peace; it is cowardice and lack of faith. Let those who do not believe, who fear, withdraw ! The way to peace leads through self-sacrifice" (In *Romain Rolland*, 1924). India has been sticking to this unique faith in peace since ancient times. Even today prayers and recitations for making peace are made during different social and religious ceremonies. The science and art of peace will be of great importance in any future-oriented solution to the problems of our time. Real happiness and prosperity can only be achieved through peace education, since peace education helps the individual to reach more mature decisions regarding his responsibilities as a world citizen.

Peace education is a form of education that goes to its own unalterable human presupposition. If human beings are to become fundamentally ready for, capable of and skilled in the peace of an epoch of world peace which is yet to be secured, they must be prepared for this situation by peace education. Put differently, peace education connotes

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**Ex-Vice Chancellor, Devi Ahilya Vishwavidyalaya, 103, Vishnupuri Annexe, Indore-452 001.*

a generalized approach to education for global responsibility in a planetary nuclear age. It operates at all levels and in all spheres of learning, includes all fields of relevant knowledge and is life long, continuous process (*Reardon*, 1988).

Peace education of this type has primarily to develop readiness, capability and skills for peace. Readiness for peace includes the possibility of recognizing conflict as such and seeking a resolution in such a manner that the basis of co-operation is consolidated. The relevant capabilities for peace are the human qualities needed to shape peace as a social process appropriate to the circumstances. Finally, peace skills include not only those of recognizing conflict and acting co-operatively but also an intelligent openness for involvement in peace in one's own sphere, combined with a sense of responsibility for supra-regional and supra-national concerns (*Rohrs*, 1992).

Peace is an ontological principle concerning the humanizing of the human beings as much as interpersonal and international relations. Positive peace has become the concept connoting a world in which the structural violence has been significantly reduced, if not eliminated. The fundamental virtue of peace is justice. Both justice and peace can be seen as two sides of the same coin. Therefore, peace cannot be achieved simply by restrictive measures to exclude violence, conflict and war. Negative peace, in the sense of a formal ordering power, is a caricature of real peace. Peace is individual. It concerns the whole person and his way of life, which must ensure the conditions for freedom, justice and happiness.

Peace education is not a special subject. Principles of peace education can permeate all educational and teaching content. Every subject, from Anthropology to Zoology, can be guided by peace education in that its point of view may be didactically emphasized. Generally the whole of school life must be influenced by the spirit of peace education. Peace education must primarily be experienced rather than taught if it is to significantly affect the young people and direct them towards the creation of peace. Peace education seeks to develop a critical awareness of world problems and a global perspective on their resolution. In essence, peace education promotes and strengthens a peaceful way of thinking and acting. It is a contemporary effort to "beat swords into plowshares". It is an attempt to transfer technical skills, machinery and capital, currently committed to war preparation, to the production of socially useful items (*Cassidy*, 1987).

What serves the purpose of understanding and co-operation across international borders is included in peace education. In this sense, international education corresponds to peace education. Some educationists feel that peace education is more comprehensive than education for internationalism. The goal of peace education is to create individuals capable of critical thinking having feeling of solidarity and empathy with the less privileged. He is a person who, on the basis of his or her own conviction and humanistic orientation towards life, is able to act in cooperation with others to create a more just world.

Some of the more important topics treated by peace education are the following :

(1) The East-West polarity and its nuclear threat to human life;

(2) The North-South conflict and its international vertical division of labour resulting in extensive poverty in the southern hemisphere;

(3) Pollution and the destruction of the environment;

(4) The scarcity of food and resources;

(5) The population explosion;

(6) The problem of broadening understanding for human rights, and social justice (*Wulf*, 1974).

A long and hard examination of the above mentioned issues is needed leading to a decrease in prejudices and in thinking of the enemy in terms of stereotypes. It implies a change in self-awareness contributing to a deepened understanding of society and the world.

As is the case with all education, peace education should take place in three areas : knowledge, skill/action and attitude. Together these areas constitute and integral whole. Peace education cannot be neutral or value free. It is essential to have the courage to work on the basis of moral humanistic values. Success of peace education efforts greatly depend on the amount of co-operation mobilized between the fields of education, peace-related research and practical politics.

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Access & Equity — Need of the Disadvantaged

S.K. Gandhe*

Conceptual Underpinning

Ever since the successful launch of the first full-fledged open university in the U.K. in 1969, the educationists, planners and administrators all over the world have commended the Open & Distance Education (ODE) system as an important step forward in expanding educational coverage especially at the higher levels. Simultaneously attempts are also made to define the conceptual build-up of the system and specify its scope, limitations and relevance to the different sections of the society. Inevitably mild controversies have surfaced amongst the academics in developing definitions and specifications of the ODE. Important writers like Moore (1973), Baath (1981), Lewis (1986), Rumble (1986), Keegan (1986), Smith & Kelly (1989) have expressed divergent views from time to time and kept the controversies alive.

In the context of this paper which deals with the access and equity to higher education, we may take a specific note of what has come to be known as the Rumble-Lewis debate. According to Rumble the main objective of the ODE is to provide an easy access to the public at large. He implies that the ODE enables people to learn at the time, pace and place convenient to them and which can considerably widen the access. Rumble's emphasis is on expanding access to higher education by ensuring learner's autonomy. Lewis, while disagreeing with Rumble's emphasis on access to educational opportunities, contends that the choice over the content of learning and over the means by which it is delivered is the essence of the ODE. He implies that access without choice of learning cannot open up education to the masses. He also argues that in practice no scheme — distance or otherwise — can be fully open to everyone. While Rumble's contention is that the system which is accessible to only some limited groups of people is really a closed system, Lewis takes the view that the system which does not provide full choice to the learners in regard to the courses of study or the modes of delivery is rather a closed system.

While such controversies will continue and divergent views on the conceptual underpinning of the ODE will be expressed in future also, one point relevant to this paper has clearly emerged : that there is a strong school of thought which believes that easy access to education is crucial, almost central, to the concept of open-distance education system. Attempt is made in this paper to examine whether the ODE has succeeded in expanding access to the needy or the disadvantaged groups of people in a vast and thickly populated country like India. A case is also made out for a special Access-Initiative (AI) on the part of the open universities of India.

The Disadvantaged Groups

A large section of India's population forms the "disadvantaged" mass socially, economically and culturally and has been denied development as a human resource. Any social scientist with reasonable insight into socio-cultural and socio-religious conditions of India would identify the following categories of Indian population as disadvantaged :

- Scheduled Castes
- Scheduled Tribes
- Women living in villages/small towns
- The rural poor : Landless agricultural labourers, marginal farmers, small farmers, rural artisans, traditional fishermen, shepherds, vagrants, monks & mendicants
- The urban poor : Slum dwellers, rickshaw pullers, beggars, prostitutes, roadside vendors, casual labourers, Child-labour, etc.
- People living in hills, deserts, forests
- Handicapped

Unfortunately no head-count is taken even in the national censuses of the disadvantaged population. Using certain assumptions and estimates I have worked out that about 580 million or almost 60% of India's estimated population of 1998 belongs to the disadvantaged groups (*Gandhe*, 1996). Its age distribution is as under :

Age-groups	*Population (millions)*
00-05	135
06-14	105
15-59	300
60+	40

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It is no wonder that with such a large mass of people condemned to the disadvantaged group, more than 40 per cent of India's population lives below the "poverty line".

In fact, illiteracy has been the bane of India's growth. Between 70 and 80 per cent of India's rural population has never attended any schooling. Even amongst those who went to schools the dropout ratio is so high that the proportion of primary school children reaching the high school level ranged between 7 and 20 per cent only in different parts of the country. There has been an over-supply of unskilled, unqualified labour with the result that the opportunity cost of labour has gone down to next to nil. Many females are unemployed not only because work is not available nearer home but also because of certain social restrictions and taboos.

The situation is worse at the higher education level. The reasons for the failure of the conventional system of education at all levels are not far to seek :

- In spite of tremendous growth in the schools, colleges and universities the infrastructure in men and materials has grossly fallen short of requirement. Private funding in education as a whole is negligible and almost absent in the rural areas. Access to education is highly iniquitous.
- The structure is full of rigidities in regard to age, attendance, evaluation, courses of study, equipment etc which often discourages students and leads to stagnation and wastage.
- Till recently, education was not considered essential, or at least indispensable, for livelihood. Female education even now continues to be considered non-essential in many parts of the country.
- Income considerations outweigh educational needs. Child labour, in spite of prohibitory laws, continues to hold sway both in the rural and the urban areas. Large numbers of living children affect chances of female education, preference being always for education of boys.
- Population explosion has outstripped the school enrolment.

The Problems of Access and Equity

If such a vast mass of humanity (300 millions) is to be educated, the primary requirement would be to open up access to education, especially the ODE. Many not only in the developed world but also in India may not realise that access to ODE can be a serious problem. For them removal of rigid entry qualifications would enable any potential learner to have access to ODE. The truth is much different. In spite of tremendous growth in educational institutions in the last five decades (universities from 20 to 240, colleges from 591 to 7923, enrolment from 0.23 m. to 5.53 m. —*source* : A.I.U., 1998), the Indian higher education system is not able to cater to more than 7% of the relevant age-group. The remaining 93% belong to the illiterate, semi-literate or lowly educated persons. It is estimated that half of the world's illiterates are in India alone. Almost all the disadvantaged groups described above belong to these categories.

The problems of access and equity especially for the disadvantaged emanate from a multiplicity of factors some of which are discussed below :

(a) The level of conviction among the disadvantaged groups' elders that education beyond the ability to read and write is an essential part of human growth is so low that majority of them do not encourage their children to go in for higher education, or even for improvement of skills through specialized schooling, training, or adult education. Their younger generation has thus no specific motivation for attaining better qualifications.

(b) Most of the Indian rural (and many urban) families believe in fatalism and accept a poverty-stricken deprivated life as *fait accompli*. Their sense of satisfaction with the poor conditions of living is further fortified by the familial pattern of Indian society which encourages sharing of one man's work/food amongst many family members. Disguised unemployment and poor nutrition are not the only result; lack of incentive for skill development as a means of improving earnings is an important offshoot. This is yet another barrier to access.

(c) An important problem of access emanates from the physical and geographical barriers, especially for the hill-dwellers, desert and forest population and people living in tiny habitats in far-flung areas. Many tiny habitats do not have even a primary school. The economic-planners hope to provide a primary school within a radius of 1.5 kms. for every habitat only by the year 2001. This indirectly reflects on the iniquitous development and leads to inequity of opportunity for education.

(d) Economic factors contribute to more serious problems of access and equity. Economic and financial constraints often prevent the aspirants from weaker sections from attaining better skills, knowledge or education. The central and state governments suffer from resource crunch. Not more than 3.7% of the GDP is devoted to education. This is grossly short of coverage-needs; quality improvement is out of the question. Many families are so weak economically that they have to depend upon children below 15 years of age to start earning whatever way they can. For such persons higher education is beyond reach. According to a government inquiry report, 42% of boys and 77% of girls of the school going age (6-14 years) did not attend schools in 1990 (*Acharya Rammurthy Commission Report*, 1990).

e) Population pressures affect access and equity in several ways. Firstly with a large section of population belonging to younger age-group and the housewives, consumption needs mount up. This erodes into the net per capita income, and renders many families into economically weaker sections. On the other hand, rapid growth of population with a wide base of the age-wise population-pyramid creates heavy demand on educational facilities. Since these cannot be increased beyond a limit given several limitations (time, finance, human resources) access is denied and inequity prevails.

(f) Females are often denied education on account of social, cultural and to some extent religious factors. In the Indian society, woman was never conceived to be an earner. Distinct preference is for the education of the boys who are viewed not only as earners but also as support in the old age. Female marriages take place early (child-marriages still exist) and it is against the societal culture for the married women to venture out of the house unchaperoned even if it is for a good cause. There are some religious taboos too against female education. This gender-inequity has severely affected growth of a majority of Indian women as human resource. In 1991, six out of every ten women (above 7 years of age) were not able to read or write in any language.

(g) Irrelevance of some of the ODE programmes/course curricula to the real life needs of the disadvantaged population also creates lopsided access. Take, for example, the case of IGNOU which is the single-largest open university of India having an enrolment of more than 425 thousand students. Almost 85% of its enrolment is from the urban-dwellers; about 80% are males, and almost 70% are registered for two programmes alone, viz., management and computers, both being relevant to the urban, corporate/business life. A very vast section of eligible population is denied access because of the irrelevance of the course curricula. Perhaps we have a mindset which thinks of higher education in terms of urban needs alone. Or, is it an escapist approach towards attaining quick enrolment results? Or, an attempt to collect large incomes by charging high fees for these courses patronised by well-placed, employed persons? One of the IGNOU mandates required it to extend education to the disadvantaged sections of Indian population. Not much progress has been made in this respect.

Summing up, it would be apparent that serious problems exist in regard to access and equity in the Indian educational system. As said earlier the conventional or traditional system suffers from several rigidities and constraints. The open and distance education on the other hand was widely accepted as a device to expand education to all the needy. It has the necessary capabilities no doubt. However the system atleast in India has not attained this avowed objective. It has emerged as a sub-server of the needs of the urban dwellers in general and the urban elite in particular. It has not made any dent worth mention on the problems of access and equity for the large mass of the disadvantaged population. Would it be wrong, therefore, to conclude that Rumble's thesis that the essence of open system is to expand access by ensuring the learner's autonomy, does not fully cover situations like that in India? Something more than the learner's autonomy needs to be ensured to expand access and equity, something that would bring about a grassroot motivation for education. What this 'something more' means cannot be specifically stated in the absence of an indepth, analytical study of the mental, physical, economic, socio-cultural barriers faced by the disadvantaged masses.

The Access Initiative

It is against the above background that a special project, "the Access Initiative (AI)" is suggested. The concept is now new. It was earlier tried by the UKOU in 1990 (*Judith Calder*, 1996), but for different reasons.

All the eight open universities of India together will have more than 1000 study centres. The AI Project can be implemented in these 1000 centres. The objectives of the project should be :

- To understand access-barriers and inequities (including gender-discrimination) faced by the disadvantaged groups.
- To explore new devices to expand access rather than depending only upon the learners' autonomy.
- To suggest most suitable course-curricula for the different disadvantaged groups.
- To examine the efficacy of the existing delivery and evaluation systems and suggest suitable changes to improve the efficacy.

The project may be funded by the national educational organizations like the UGC, AIU, DEC, with additional assistance from international organizations like the UNESCO, COL, ADB and others. The results may be presented in a report which could be

(Contd. on page 11)

Investment and its Utilisation in TNAU Library, Coimbatore

R. Jayaraman*

Introduction

Library in the modern age of Science and Technology forms an integral part of an educational system. No educational system is complete unless and until it is supplemented by a network of libraries. Library is a powerhouse; generating information and knowledge. Dissemination of knowledge/information is the main function of the library and library generates information through various types of bibliographical resources and literature. The objective of library of agricultural university is to make this information/technology and technical knowhow available to the agricultural scientists, students, teachers and extension specialists. The scientists through extension specialists, transfer the technology and knowhow to the farmers who are the actual beneficiaries of this technology.

Tamilnadu Agricultural University Library

The Tamilnadu Agricultural University (TANU) came into existence on June 1 1971. At that time it was the 16th Agricultural University established in India. Today there are 28 agricultural universities in our country. The process began when the Government of India accepted the recommendations of Dr. S. Radhakrishnan Commission to establish "Rural Universities" in different parts of India after realising the need and importance of education in different branches of agriculture and allied sciences the advancement of learning and prosecution of research and extension education to the farming community in co-operation with the concerned government departments. While implementing the suggestion, the land-grant college pattern of the USA was taken as a model. The university is successor to the Experimental Farm (1876) at Saidapet near Chennai and the Agricultural College, Coimbatore (1908). It is located near the Western Ghats and the Nilgris, stretching over about 950 acres of land representing all types of soils, salubrious climate and factors conducive to research and development in agriculture.

The following institutions are constituent units of the university : Agricultural College and Research Institutes at Coimbatore, Madurai, Killikulam; Trichy College of Agricultural Engineering, Kumulur; Horticultural College and Research Institute; Periyakulam; and Forest College and Research Institute, Mettupalayam.

The Library of the Agricultural College (the present TNAU library) was established in 1910. It is a university library dedicated to the promotion of higher education and research in Agriculture and extension activities. It strives to meet these expectations. It has as its nucleus, the collection belonging to the school of agriculture, once attached to the Experimental Farm at Saidapet, Chennai. The library serves the academic staff, research workers, students, administrative staff, staff of extension centres, research stations and farmers. The students and staff of several of the neighbouring institutions also visit the library. According to the latest available data, the library has a collection of over 1.47 lakhs books and periodical back files and is procuring 800 current periodicals. The library is a distinguished unit of TNAU functioning as any other department with comparable responsibilities and status.

Objective, Sample Design and Methodology

The objective of this research paper is to explain the pattern of investment and intensity of the use of library during 1985-1995 in TNAU, Coimbatore. This study is based on both primary and secondary data.

The primary data were collected from a well structured questionnaire from the selected sample of 95 users of the library during March 1996. The secondary data are taken from the Annual Reports of TNAU.

The visitors were classified into five categories viz., Undergraduate students (UG), Postgraduate Students (PG), Ph.D scholars (Ph.D) staff members (Staff) and others. The sample consisted of 26 UG, 31 PG, 14 Ph.D., 22 Staff and 2 others. Among the respondents 60 per cent were male and 40 per cent female. The respondents were distributed in probability proportion, among different categories of users identified in the preliminary survey and selected by simple random sampling method. Selected respond-

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ents were personally contacted by the researcher himself and enquired with the help of a pretested comprehensive enquiring schedule. For the analysis of utilisation of the library scaling technique has been employed.

Investment

The investment in TNAU Library consists of various fixed and variable expenses. The data collected for the study included secondary data on volume of books/journals in the library and annual cost of maintenance of the library both total and per volume. Detail of the fixed and variable costs of maintenance of library are presented in Table 1.

The total budget of library was Rs. 14.26 lakhs in 1985-86. During the period of 10 years it has gone upto Rs. 30.30 lakhs in current prices. During the years, the library has spent on journals on an average 77.06 per cent of total investment. Expenditure on books was 3.93 per cent. Cost of personnel was only 12.75 per cent of the total expenses. As books and journals were the real assets of the library besides the capital works (buildings and equipments) total expenses on them could be treated as investment expenditure of the library. It accounted for 81.68 per cent of total expenses. Cost of personnel and contingencies constitute the maintenance services cost. They account for 18.32 per cent of total expenses. The ratio of maintenance expenditure to total investment cost was 0.23. The library is understaffed and the library has to provide services to personnel (students, staff and others) from all campuses and other institutions (of Indian Council of Agricultural Research, Government of India and other universities) in Coimbatore.

Above analysis shows the costs side of library maintenance; the benefit side could be understood in terms of the number of reference materials (books, journals and backvolumes) and the pattern of their use. Details on stock and use pattern of books and journals in TNAU library are presented in Table II.

The number of books and backvolumes stocked in the TNAU Library was nearly 1.28 lakh in 1985-86 and it rose to 1.43 lakh in 1994-95; an addition of just 0.15 lakh over a period of 10 years. The stock is large because of long years of standing of the library, but new additions in the last decade ending 1994-95 were very less; again the resource crunch and the need to

Table I : Fixed and Variable Costs of Library Maintenance at TNAU, Coimbatore

Year	*Expenses on*					*Grants availed*		*Total*
	Personnel	*Journals*	*Books*	*Other recurring*	*Non recurring*	*ICAR Grant (for Books)*	*Capital Works Non recurring*	
1985-86	2,01,000	9,64,010	1,04,360	81,640	75,000	NG	NG	14,26,010
1986-87	2,18,200	10,85,820	24,330	51,600	NG	NG	NG	13,79,950
1987-88	2,21,000	14,80,580	81,270	58,060	6,590	NG	NG	18,47,500
1988-89	2,31,200	15,99,400	1,01,070	99,330	5,000	NG	NG	20,36,100
1989-90	3,12,500	17,26,010	1,52,020	72,970	2,25,000	NG	1,70,610	26,59,110
1990-91	3,67,900	19,87,670	9,080	68,370	30,000	NG	NG	24,63,020
1991-92	3,64,200	24,37,250	5,550	85,110	NG	NG	NG	28,92,110
1992-93	4,15,000	27,82,460	22,240	1,65,310	NG	NG	NG	33,85,010
1993-94	3,30,000	25,83,240	35,280	2,01,410	NG	3,00,000	NG	34,49,930
1994-95	4,71,300	22,85,020	30,580	1,43,090	NG	1,00,000	NG	30,29,990
Total	31,32,300	1,89,31,460	5,65,880	10,26,890	3,41,590	4,00,000	1,70,610	2,45,68,730
%	12.75	77.06	2.30	4.18	1.39	1.63	0.69	100.0

Note : NG - Not Granted.

Source : Tamilnadu Agricultural University : 15th Annual Report 1985-86, pp.61-62, 16th Annual Report 1986-87, pp.63-64, 17th Annual Report 1987-88, pp.61-62, 18th Annual Report 1988-89, pp.70-71, 19th Annual Report 1989-90, pp.63-64, 20th Annual Report 1990-91, pp.62-63, 21st Annual Report 1991-92, pp.59-60, 22nd Annual Report 1992-93, 23rd Annual Report 1993-94, pp.80-82, 24th Annul Report 1994-95, pp.85-94.

spend heavily on subscribing to the journals especially foreign journals, might be the reasons for the slow growth of the stock of books. There was a steep decline in the number of both Indian and foreign journals subscribed. The number of Indian journals subscribed by the library was 314. The number fell sharply to 295 in 1994-95. This was mainly due to increasing prices of journals. The number of foreign journals steadily fell to 340 in 1994-95 from 568 in 1985-86. The journals on gratis increased in number from 162 in 1985-86 to 191 in 1993-94 with a decline to 174 during 1995-96.

There were on an average 74,132 visitors in a year, but there was a wide inter year variation as shown by the range of 51,899 in 1991-92 to 93,900 in 1990-91.

In all the years, from 1990-91 to 1994-95 there was a decline in the number of visitors compared to the decadal average of 74,132 because the U.G. Agricultural Engineering and U.G. Horticulture courses were shifted to Kumular and Periyakulam from Coimbatore campus.

The books issued on loan averaged 57,578 per year, but the inter year variations show very wide fluctuations. The books consulted in the library premises were less than average of 9,47,110 of the decade in seven out of 10 years. The wide inter year variations in books used is not a healthy sign of library performance.

The ratio of books issued on loan and the books consulted to the total number of visitors (i.e.) books loaned/consulted per visitor were 0.77 (57578/74132) and 12.78 (947110/74132) respectively the values being significantly larger. The implication is that the performance of the library is rated high, but the scope for further improvement is also large, because the Coimbatore campus has several centres of advanced study and many visitors from other campuses and Ph.D. scholars. Thus by the four criteria (Performance indicators) such as stock of books/journals, number of visitors, number of books consulted and the number of journals received the performance of the library of the main campus at Coimbatore is rated high. However, for its long standing, strength of the staff and outside visitors the performance could be much better for Coimbatore. There is need for special efforts to encourage the staff and the students to use the library facilities more than now.

Characteristics of Users

The characteristics of users of the library will show the strength and weakness of the library services. Therefore they are studied by the distribution of the users by age, sex, caste, and economic status. The library makes no dicrimination among its users

Table II : Stock of Books and Pattern of their use in Library of Tamilnadu Agricultural University, Coimbatore

Year (1)	*Total No. of visitors* (2)	*No. of books issued on loan* (3)	*No. of books consulted by Readers* (4)	*Total books used* (3+4)	*Journals (No.)*				*Total No. of books and back-volumes in Accession No.)*
					Indian	*Foreign*	*Gratis*	*Total*	
1985-86	74,538	51,845	6,95,130	7,46,975	314	568	162	1,044	1,27,784
1986-87	70,550	50,035	6,72,081	7,22,116	314	535	162	1,011	1,30,023
1987-88	79,906	57,898	7,56,510	8,14,408	315	563	158	1,036	1,31,507
1988-89	89,868	54,590	9,12,755	9,67,345	315	563	158	1,036	1,32,963
1989-90	88,580	69,051	16,67,248	17,36,299	315	563	165	1,043	1,33,634
1990-91	93,900	90,279	15,05,473	15,95,752	204	492	144	840	1,34,407
1991-92	51,899	38,327	5,16,381	5,54,708	280	406	148	834	1,35,414
1992-93	67,204	66,243	6,50,115	7,16,358	294	340	176	810	1,38,480
1993-94	66,347	66,255	8,55,968	9,22,223	294	330	191	815	1,40,967
1994-95	58,527	31,254	12,39,441	12,70,695	295	340	174	809	1,43,006
Total	7,41,319	5,75,777	94,71,102	1,00,46,879	2,940	4,700	1,638	9,278	1,43,006
%	74,132	57,578	9,47,110	10,04,688	294	470	164	928	—

Source : From the original records of Library Statistics, University Library, Tamilnadu Agricultural University, Coimbatore.

by any of these aspects. The analysis is the expost classification of the users, and serves only to understand their importance in evaluating and, if need be, reformulating the ways and means of library services to achieve better coverage. U.G., P.G. and Ph.D. students in the age of 30 years or younger and the staff members aged 31-40 years are the important users of the library of TNAU. The sex-wise distribution of students and staff members who use library is closely in proportion to their relative share in total number of students and staff members.

The community of users classification of the utilisation of the library revealed that about 64 per cent of Backward Community, 18 per cent of Most Backward Community, 10 per cent of Scheduled community and 8 per cent other community.

The economic status of the users revealed that about 60 per cent of middle income groups (Rs. 9001-18000), 20 per cent of high income groups (Rs. ≥ 27000), 17 per cent of upper middle income groups (Rs. 18001 to 27000) and 3 per cent poor income groups (Rs. ≤ 9000).

Utilisation Pattern

The users of the library were requested to indicate the nature of references they make in the library. More specifically they were asked to state their uses of text books, journals, general knowledge books, dissertations, abstracts and newspapers. The respondents were asked to state not only the type of materials referred by them but also relative frequency of their use on a three point graded scale showing : (a) always (b) mostly (c) rarely. The ratings were given the score of 4, 3 and 1 respectively with the help of frequency of the references and the materials used. The details of the utilisation pattern by different types of library users are accounted for in Table III.

Table III : Utilisation Pattern of TNAU Library

S.No.	*Users*	*Always*	*Mostly*	*Rarely*	*Total Score*
1.	UG	55	12	84	332
2.	PG	46	64	68	444
3.	Ph.D	24	23	37	202
4.	Staff	32	42	53	307
5.	Others	5	3	10	39

Source : Survey data.

By the total score value the pattern of references n the library by U.G. students of Coimbatore shows hat textbooks rank first followed by newspapers, ournals, general knowledge books, abstracts and dissertations. With P.G. students reference to journals receives the highest score and ranks first. The first rank for the journals is explained by the importance of their research for masters degree programme. Second rank for abstracts, third for textbooks, fourth rank for newspapers, fifth for dissertations and sixth for general books.

For the Ph.D scholars journals rank first and abstracts second. This was in agreement with the *a priori* expectations. The books and journals rank first and second in the use by the staff. Further the score values for books and journals were very close and significantly higher than that for all other items. Third in rank came the abstracts. General knowledge books, disseratations, newspapers are less important.

There is a definite pattern of library use for each of the four major groups (excluding others category) of library users. Two definite results emerge from the analysis. First, the pattern of library use differed between the groups but more or less similar for each group. The use pattern of library is consistent with their needs, again for each of the four groups of respondents. Therefore it is reasonable to infer, that books, journals and abstracts are most important references followed in close proximity by newspapers and far below (in rank) by dissertations and general knowledge books. There is a growing interest among postgraduate students for participation in competitive examinations. They need general knowledge books and disseratations.

A study of preferences of the users (details presented in Table IV) shows that agricultural subjects rank first in preference of three groups and rank second for PG students for whom related subjects rank first.

To help the students, the staff also finds first preference to agricultural subjects. But their second preference was for humanities and social sciences and not for the related subjects in which they have acquired sufficient knowledge during their postgraduate and doctoral studies.

Preferences in Reading	*Scores assigned*
1. Agricultural subjects (Curriculum subjects)	5
2. Related subjects (Mathematics, Statistics, Physics, Chemistry, Engineering, Animal Husbandry, Computers)	3
3. Humanities and Social Sciences (Economics, Agricultural Extension, Rural Sociology, Rural Development)	4

4. General books (Books for competitive examinations) 1
5. Reference books (Dictionaries, Encyclopaedia, Reports, Yearbooks etc.) 2

The need to relate lab to the field encourages them to take interest in humanities and social sciences. Agricultural subjects find first preference with only one exception of postgraduate students who rank it second, giving first rank to related subjects. Humanities and social science books find second preference with the staff. General books find third rank except with UG students who give the last rank to it. Reference books receive the last rank for all other groups because they have in general limited use. Further above ranking is consistent with the pattern of use of library. TNAU have to assign priorities in the descending order as agricultural subjects, related subjects, general books, humanities and social sciences and reference books.

Use of Displays

Several valuable information are brought to the notice of the visitors to the library. Therefore, seeing these displays regularly is a good virtue of library user. The utilisation of display boards of the TNAU library is presented in Table V.

Table IV : Mean Score Ranking of Preference in Reading in TNAU Library

Sl. No.	Subject		U.G.	P.G.	Ph.D.	Staff	Others
1.	Agrl. Subject	M	4.2	3.45	3.64	3.9	
		R	I	II	I	I	
2.	Related Subject	M	3.7	3.64	3.41	2.01	NA
		R	II	I	II	III	
3.	Humanities and Social Science	M	2.84	2.74	2.79	3.3	
		R	III	IV	IV	II	
4.	General Books	M	1.15	3.31	3.35	2.59	
		R	V	III	III	III	
5.	Reference Books	M	2.8	1.39	1.38	1.09	
		R	IV	V	V	V	

Note : i) Values represent mean score for the group subjectwise based on score values assigned earlier.
ii) M—Mean Score, R—Ranking order.
iii) NA—Not applicable.

Source : Primary Data.

Table V : Use of Display in the Library of TNAU by Users Groups

User groups	*Always* No.	*Always* %	*Frequent* No.	*Frequent* %	*Occasional* No.	*Occasional* %	*Not at all* No.	*Not at all* %
UG (26)	2	7.6	3	11.5	3	11.5	18	69.2
UG (31)	8	25.8	7	22.5	16	51.6	—	—
Ph.D (14)	8	57.1	4	28.5	2	14.2	—	—
Staff (22)	10	45.4	4	18.1	6	27.2	2	9.0
Other (2)	1	50.0	—	—	1	50.0	—	—
Total (95)	29	37.2	18	16.1	28	30.9	20	17.6

Note : Figures within brackets show the number of respondents.

Source : Primary Data.

The first rank goes to Ph.D. Scholars for use always and frequent use, to PG students for occasional use and to UG students for not at all using. Therefore UG students of Coimbatore library need to be convinced about the utility of the display boards. Till the use of display board becomes a regular habit with students and the staff, other methods of communicating with the library users such as notes at the signing table and personal cantact have to continue. It is a waste of time for the library staff and hence costly.

Benefits

The respondents were asked to list out the benefits derived by them from the use of library. Availability of literature useful to the students and the staff is the most important benefit as reported by 71.5 per cent. Second in rank is the benefit of easy access to the data — 56.8 per cent. Top two ranks assigned to availability of literature and easy access to the data show that library meets their purpose fairly well. It is a good commentary on the services of the library. Benefit cost ratio show the library to be economically viable.

Conclusion and Implications

The TNAU library meets the expectations of the users fairly adequately in terms of reference materials available, guidance availed and infrastructural facilities for reference, making copies and to get information on latest findings abroad. The library is stated to be kept tidy and the services systematic and helpful. The users acknowledge in clear terms not only availability of sufficient reference materials but also arrangements to make them available to the users. These are the primary functions of any library and hence the library is rated high in their performance. Yet some improvements are possible and desired. It means that the expectations are never fulfilled totally because in general, good services of library demand still more good services.

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(Contd. from page 5)

widely discussed and deliberated upon. An action-plan should follow.

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NOMINATIONS INVITED

Shanti Swarup Bhatnagar Prizes in Science and Technology for 1999

Nominations are invited by the Council of Scientific and Industrial Research (CSIR) for the 1999 Shanti Swarup Bhatnagar (SSB) Prizes in science and technology. The SSB Prizes are to be given for research contributions made primarily in India during the past five years. The age of the nominees for the 1999 SSB Prize should not be more than 45 years as on 31.12.1998.

The SSB Prizes, each of the value of Rs. 1,00,000 (Rupees one lakh only) may be awarded for notable and outstanding research, applied or fundamental in the following disciplines : (1) Biological Sciences, (2) Chemical Sciences, (3) Earth, Atmosphere, Ocean and Planetary, Sciences (4) Engineering Sciences, (5) Mathematical Sciences, (6) Medical Sciences and (7) Physical Sciences.

Nominations should be sent as per the prescribed proforma (20 copies) along with one set of reprints of significant publications of last 5-year period by **31 March 1999** to the Head, Human Resource Development Group, Extramural Research Division, CSIR Complex, Pusa, New Delhi-110 012. The proforma for nomination may be obtained from the above address.

Emerging Trends of ERP

Nasib Singh Gill*

What is ERP?

ERP stands for '*Enterprise Resource Planning*'. ERP is now emerging as a very important discipline in its own right. ERP is not a new concept or philosophy. It has been a part of our operating culture since early businesses. Earlier planning and control were done manually and today, because of diversified businesses and complex products, it requires advanced technology like computers to crunch large volumes of data faster and generate information which makes it easier to run business. In the present times of Information Technology (IT), this discipline has got world-wide attention.

"ERP can be availed of by multiple users for multiple users for multiple uses at multiple places". An ERP is not a magic rod which provides a solution for all the problems in the organisation. It is a powerful tool and like any tool, its utility is entirely a function of the way it is used. Therefore, it requires a lot of hard work. It is not just top management commitment but involvement of every team member of the project that will deliver the appropriate and intended results.

In the light of IT tools, ERP may be treated as a set of software covering major business areas like Finance, Materials, Manufacturing, Distribution, Logistics and Sales, etc. all so tightly integrated with one another that any business activity recorded at one place is immediately reflected in all other places. For instance, if the data is entered only once at the source, it avoids duplication of data entry, and thus dramatically improves the data consistency and integrity. This will become possible only if the information is processed through computers and the same information gets distributed through networks at dispersed locations even overseas. Let's take an example, when some material is received and accepted in the store, not only is the stock of the item immediately upgraded, the pending purchase order shows the material as delivered and not outstanding, the purchase indent of the requesting party is immediately updated to indicate serviced, the supplier of the material is credited by the amount of the supplied value, the company's outstanding payables is increased by the same value, and so on.

ERP Market and Major ERP Players

ERP has been around in the world for over two decades but in the Indian sub-continent it has appeared only in the last three to four years. Why it is considered more efficient than the earlier traditional application systems is because it takes into account all aspects of business. The ensuing data becomes part of a composite whole.

The tangible benefits which an ERP application offers include Reduced manufacturing cycle times; Lower costs; Better management of resources reducing cost of operations; Higher productivity; Customer satisfaction increased due to shorter delivery cycle; Improvement in the quality of decision making; Brings consistency of operations in world of business; Freer access to data; Make the management knowledge-driven; Greater flexibility in work processes; and Transparency and an environment which is conducive to quicker decision making.

The acceptability of ERP solutions is indicated well in the Table 1.

Table : 1

ERP Market	
1995-96	518 Million Rs.
1996-97	753 Million Rs.
1997-98	1145 Million Rs.

ERP as implemented by a growing number of companies world-wide provides them with an application that integrates business processes. It is also a means of increasing productivity while cutting costs. According to International Data Corp, the ERP applications market in India is likely to grow by 90% in 1999. The $17.9 million Indian market in 1997-98 owed its revenues to 350 companies which opted to install ERP solutions. World-wide there are over 15,000 sites and approximately 2.2 million users.

Major ERP players in the market are SAP, Baan Infosys, Oracle Corporation, Ramco, QAD India,

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Informix, Sybase, SAP AG, PeopleSoft Inc., Baan Co., QAD Inc., and J.D. Edwards & Co.

Attention Towards ERP Just Now : Why ?

One of the significant reasons why this is the right time to go in for ERP solution is the Year 2000 problem (Y2K). Most of the old software will not work properly after the year 1999. While most in-house systems may not be geared to tackle the problems posed by the new millennium, almost all ERP vendors are ready for this change.

Tremendous developments are taking place in the IT industry and following this the entire world has been dragged to the desktop of the enthusiastic information users. Thus, today we are at the threshold of a paradigm change in the field of IT. IT departments, which are already under the pressure of a severe backlog, have a tough task adopting to this new scenario. Under this backdrop, ERP attains a place of significance.

For the ERP vendors, software is their bread and butter. Unlike an in-house IT set-up, they can afford to invest in R&D and for monitoring the market trends. In-house IT departments don't have easy access to the latest trends, nor do they have the time and money to start developing systems using all emerging technologies before they are in the market and proven as *de-facto* standards.

ERP vendors work with beta versions of the new software (e.g. new operating systems, databses, groupware products and Internal products) so that they are ready with their ERP product incorporating new technologies very shortly after they are released in the market. ERP vendors can afford to, rather need to, adopt all new technologies, whether they succeed or not. Whereas in-house developers would wait till the product is released, see who wins over the competition and then adopt the new technology. Such inertia just will not be acceptable in the near future. The question today is not whether companies should adopt ERP but with this tremendous change in technology and its growing competition, ERP seems the right choice at this right time.

Structure of ERP

A logical structure of ERP is necessary to ensure that it covers all parameters in a logical way and a detailed micro plan can be derived from macro plans at the aggregate level. The fundamental structure of ERP is shown below in Fig. 1.

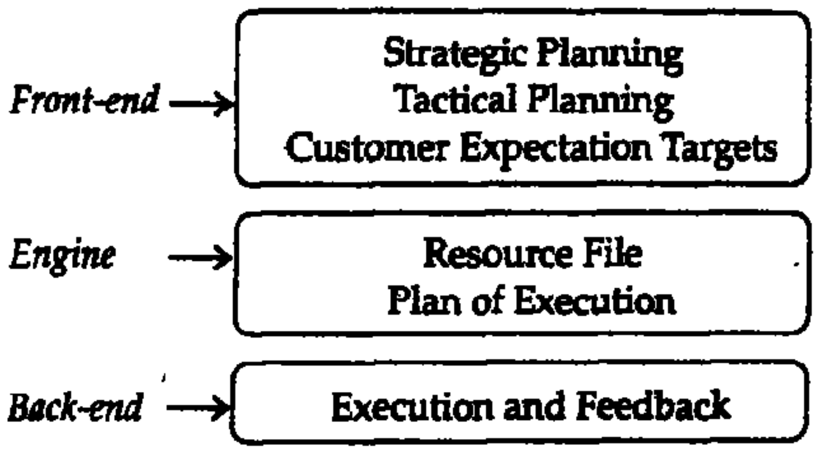

Fig. 1 : Fundamental Structure of ERP

This structure indicates many important issues such as :

- ERP should always start from the top. Vision and the long term objectives should drive ERP.
- ERP should have well defined methods of disaggregation of vision and strategic plans into more specific tactical plans and detailed execution plans.
- ERP should support execution of plans and have a strong feedback mechanism.

As ERP is largely associated with manufacturing, hence considering the manufacturing environment, the ERP structure in Fig. 2 shows its various components.

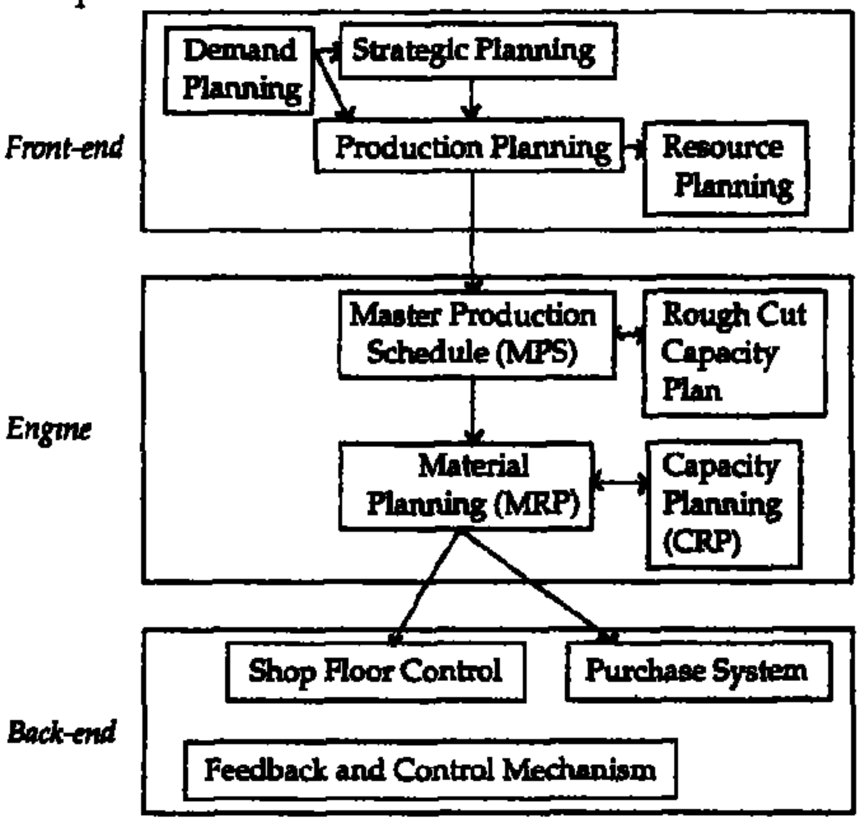

Fig. 2 : Structure of ERP System

Application of ERP to Educational Institutions

The ERP system plays the role of front running system. The major decision making and its execution takes place through the ERP. It is a system of managing all functions of the organisation with information support coming through the ERP.

UGC is stressing the need to get all Indian universities and institutions interconnected so that the same can be accessed at the world Scene. Keeping this objective in mind UGC is also providing money to these universities for getting VSAT installed for this purpose. INFLIBNET (Information Library Network) Centre, Ahmedabad is also on the way of creating a INTRANET of all the Indian University Libraries and other educational institution libraries so that all these participating institutions can make use of the global resources all over the country as well as their local resources may be put to use depending upon their respective needs.

Automation of the offices as well as the libraries and information centres in various universities is also a step approaching towards ERP system. The concept of Digital Libraries, Electronic Publishing and Virtual Libraries also seem to become very common by the beginning of 21st century. These are nothing but the full exploitation of the current Information Technology (IT) tools.

Few areas in which ERP may prove of great help in educational institutions are : Research & Development, Optimisation of Resources, Institutional Planning and Control, Budget Economics and its Distribution, University Industry Liaison activity, Electronic Data Interchange (EDI), Movement tracing systems, Attendance Management, Document Management, Communication Management, and Personnel Management.

A typical ERP package solution includes almost all the modules outlined above. Primarily the ERP solutions are meant for business organisation where it deals with the planning and use of resources used in the business. The major difference in the two is that educational institutions have the major academic resources besides finance and human resources whereas on the other hand the business organisations resources include finance, materials, manufacutring capacity, sales & operational plans and human resources.

ERP in Public Sector

ERP is not only confined to corporate sectors but has also extended its wings in public sectors as well. IT today can be used as an overall aid to effective administration, on the same lines as corporates are using it for enterprise management. In their case, end beneficiaries are customers — giving these enterprises a competitive edge. Here the beneficiary would be the citizen who deserves a right to expect a better deal from a system he has given a mandate to control and regulate his life to a certain extent.

The public sector can be divided into three broad categories: Non-profit organisations, e.g. Universities, Research Institutes and International Organisations; Central and State Governments; and Local Authorities like Municipal Corporations.

The experience of large vendors, like SAP and Baan, has shown that even in the public sector, standard business software can be provided which meets most countries' needs. The available solutions cover a range of areas related to public sector: Health Care, Utilities, Telecommunications, Postal Services, Rail-roads, and Transportation.

These softwares have features for financial as well as asset accounting and funds management, alongwith which proper budgeting controls can be exercised. Public sector oriented ERP applications are already in place in hundreds of installations worldwide. These include Cities of Basle and St. Gall, University of Zurich in Switzerland, Queensland Treasury in Australia, Royal Canadian Mounted Police, Department of Finance in the cities of Edmonton, Ottawa and others in Canada. In fact Phoenix, capital city of Arizona in US, was one of the foremost to go for ERP, and has since been awarded *Best Run City of the World* after it implemented SAP R/3.

How to Make ERP a Success?

ERP is very difficult to achieve but not impossible at all if we carry out a lot of spade work in a systematic manner. The following are few requirements for ERP to deliver expected results:

- Identification of information and workflow
- Analysis of information needs
- Simplification and rationalisation of activities
- Policies to be decided on the basis of the redesigned activities
- Systems and procedures for various activities
- Standardisation of procedures
- Integrated MIS
- Data integrity and consistency

- On-line information availability
- Secured access.

Indianising ERP packages

Most of the ERP solutions need some changes to suit the environment. The Commerce and Corporate Laws differ from country to country and the ERP in such cases need customisation to satisfy the local requirements of the business. An ERP package from an MNC company will need Indianisation in atleast areas like Excise, Sales Tax, Octroi and Payroll. Implementation also needs to beware of tinkering with the source code to meet their specific requirements for further maintenance reasons. When the new version needs to be installed, maintaining the customised code will become a major problem. Customisation should also keep in mind retaining the best practices that are built into the system. Discarding them in favour of existing procedures will ultimately reduce the benefits.

Tips for ERP Implementation in India

- Be open to ideas. There is no best implementation methodology. Any methodology can be improved upon with new and unique ideas.
- Do your homework—there is no substitute for it.
- Look carefully before you leap. Even with the best consultants, there may be problems unique to your implementation.
- Have patience. Just as with driving, rushing things is a recipe for disaster.

ERP Scenario for the Future

Based on feedback from existing and potential ERP users world-wide, Gartner Group identified four questions that captured their key information needs. These are : 1. How will the functional requirements for ERP change during the next 5 years? 2. What will be the viable architectures and technologies that support ERP during next 5 years? 3. How will the marketpalce for ERP change during next 5 years? 4. How should users deploy ERP?

Functional Requirements

ERP started of as Materials Requirement Planning (MRP), a tool to enable factory supervisors to plan for raw materials and semi finished products required for the manufacturing process, batch or continuous. After a few years Manufacturing Resource Planning (MRP II) was born. Now the concept has expanded to cover non-manufacturing activities too, like purchase, distribution, finance and human resources; and gained an appropriate tile, Enterprise Resource Planning (ERP).

Now, a new term Extended ERP (EERP) is coined by Gartner Group which enables companies to move from thinking and planning in terms of an internal enterprise model to an external value network model. EERP will enable companies to improve three areas: Cost, Speed, and Quality which can ultimately provide a competitive business advantage.

Technology and Architecture

One consideration for many corporations is the suitability of Windows NT as the network and application server platform. Gartner expects that by the year 2001, NT will be suitable even for conservative and demanding users, and also supported by practically all ERP vendors.

Market Place

The dominant trends are as follows :

- The diversity and range of users continues to increase.
- Single vendor strategies erode as enterprises realise the limitations of vendors across business areas.
- Rather than unifying an enterprise behind a single vendor, the need continues to increase for multiple, disparate architectural elements to coexist.
- Legacy applications and their architectures are not fully retired, and continue to impact architectural evolution as a new breed of legacy applications is formed by the remnant of first generation client/server applications.
- The licensing schemes that ERP vendors are offering are also changing.

Deployment

The probability of ERP deployment delays and over budgets is increasing. The current risk factors include :

- Information systems departments being downsized or outsourced.
- Skills deficiency.

- Technology limitations.
- High user expectations.

The future risk factors will arise, such as :

- Accelerated market consolidation.
- Object and component revolution.
- Network distributed architecture.
- Year 2000 compliance barrier.

However, overall it is expected that ERP implementation times will decline by 20% by the end of the decade. This will be enabled by the fact that companies will change their IT focus from developing product and technical expertise in-house to cultivating project management skills and simultaneously managing multiple relationships with system integrators, consultants and other third parties.

How to Select ERP Packages?

With the information flooding into all structures of the enterprise, new information based relationships are continuously being created between areas like Finance, Personnel, Sales, Marketing and Distribution, Manufacturing, Purchasing and Inventory, Human resources, Planning and Control, Supply chain management, and Field service. ERP software has become means to support and accelerate the above process. ERP today is capable of managing a range business processes, from order entry, to procurement, to manufacuturing, to distribution management.

With a wide variety of ERP packages, it is easy to get confused while choosing the right ERP package for one's organisation. Unlike Word Processors and Spreadsheets, ERP packages are quite expensive. Replacing one package with another is not a straight forward exercise. Implementing an ERP package is very demanding exercise — not something to be taken lightly. A poor ERP implementation can have a damaging effect on the respectability and morale of the people involved and typically senior people from various functions are involved.

There are atleast four reasons why selecting the right ERP package is critically important.

- The ERP package selected will determine the base level of IT support for key business processes and divisions of the enterprise over 5 to 10 years.
- It provides an opportunity for business process owners and key users to participate in a structured evaluation exercise, thereby building better buy-in and commitment for the selected package, which ultimately leads to easier and faster implementation.
- It improves the understanding of the strength and weaknesses of key business personnel, thereby setting expectations at the right level in the initial stages itself.
- It makes it possible to develop a structured implementation plan, which covers costs, resources and benefits.

Is ERP Really Needed for an Organisation?

The answer is an absolute "YES". An organisation does not need to evaluate and cost justify its purchase. ERP is not a new concept or philosophy. It has been a part of our operating culture since early businesses.

Earlier planning and control were done manually and today, because of diversified businesses and complex products, it requires advanced technology like computers to crunch large volumes of data faster and generate information which makes it easier to run business. Technology has been changing rapidly and continuously.

No doubt, ERP implementation is an arduous task. But the critical success factors in addition to the above strategy are Executive commitment and support; Respected and effective project leader; Use of proven technology; Education and training; Allocation of resources and elimination of waste; and Ongoing quest for excellence.

ERP Enhancement Through EDI

EDI (Electronic Data Interchange) is the direct transfer of business information, between computer applications, in different organisations without human intervention, using widely agreed standards to structure the transaction or message data.

Direct Benefits of EDI

The following are some direct benefits of EDI : Reduction in communication costs; Reduction in administrative costs; Reduction in stationery; printing and handling costs; Elimination of errors as data re-keying is avoided; Speeding up of processing time for documents; Reduction in the need for follow up on telephone; and Saving time through process automation.

Indirect Benefits of EDI

The following are some indirect benefits of EDI : Shorter order cycle time, with decreased uncertainty, as delivery and receipt notifications are received electronically; Reduction in inventory levels; Reduction is storage costs; Reduction in out-of-stock situations and better production planning; Reduction in production line shutdowns due to non-availability of raw materials; Improved internal operations; Improved customer response; and Increased sales due to increased productivity.

Thus it is evident that EDI and ERP when combined together can give an enormous benefit to companies in the areas of operations and planning.

Statistics in ERP and Decision Making

During the last two decades there has been a drastic and dynamic increase in successful application of quantitative methods of Management, Operations Research, MIS and DSS. These applications provide new insights in what, how and when to apply the statistical or quantitative techniques in managerial decision making. The increasing demand of management oriented courses and related studies have proved this fact. This has further increased the importance of statistics and its practical utilities in management.

The principal objective of the inclusion of this subject is to provide a step-by-step procedure with which the students master the use of the various tools of quantitative methods. This primary objective is supported by the following secondary objectives :

- Provide a vocabulary of quantitative methods;
- Clarify the central issues of decision making and resource allocation;
- Clarify the relationship between quantitative methods, computers and information systems; and
- Familiarise its users with the scope of quantitative methods and include applications both for private and public sectors of our society.

A good exposure and teaching of these statistical methods have become the need of the hour. A statistical data or any information constitute the raw material of the statistical method. The field of Statistics provides methods for collecting, organizing, analyzing and interpretation of the information. The information can be either available or collected by the investigator. Next comes the turn of the Manager who is interested in either of the following situations :

> The data need to be presented in a form which helps in easy grasping by way of graphs, diagrams, charts and tables; To test some statistical hypothesis and draw inferences about the information available; Some unknown quantities have to be estimated or relationship established for future course of action; A decision has to be made under uncertainty to be followed by action.

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The Gap Between Plan and Action

His Excellency Shri K.R. Narayanan, Hon'ble President of India, delivered the Convovation Address at the first convocation of Tezpur University. He said, " There seems to be a gap between plan and action generally in our country. I do not know what is the reason for this. May be the traditional system of our education. While it was very elevated, very philosophical, reaching out for the stars and heavens — prime sequence of the universe. But we used to stand away from using our hands. Manual work was always a bit of an anathema in Indian society. I think that impeded the implementation and the application of knowledge for the benefit of the common people and for the country as a whole." Excerpts

The Tezpur University is one of the finest products of the Assam Agreement which Sri Mahanta signed with the Government of India in the presence of Prime Minister Rajiv Gandhi. I am happy to see the fulfilment of an important clause contained in that accord which is this university. Therefore, it is great satisfaction that I stand here on the occasion of the first convocation of this university.

This is a university placed in rural surroundings and dedicated to the development of Assam and to the cultural progress of Assam. While I heard the pledges being taken by the students today, I thought they were different from the pledges normally taken by students who passed out of the universities in India. There is an additional pledge having their loyalty to society and the commitment to serve the society in which they live. I am reminded of what the great leader of Assam, Lokapriya Gopinath Bordoloi, said in 1939. And I should like to quote what he said, "a new economic order must be brought into existence, where any kind of exploitation would not be possible. The moral conscience of man must be so trained that in place of an idea of unholy competition and exploitation of its neighbour, service to him and society must find full scope." The essence of the pledge you have taken today is what Gopinath Bordoloi advised, not only Assam, but the entire Indian nation to follow. Education has an intellectual, spiritual and social content. Here I am glad to see that the university has been so planned that it has an orientation towards the development of Assam, that a university should have a developmental goal is adopted all over the world now, particularly in developing countries.

Tezpur University has given extraordinary importance to science and technology in its curriculum which is as it should be. I understand, the courses conducted here are in the frontier areas of science and technology. We certainly need to acquire new knowledge in the high-tech area and we should be up-to-date with our knowlege in the frontier areas that are opening up before mankind in science and technology.

But mere knowlege of science and technology is not enough. We have, during the last fifty years, accumulated a tremendous stock of knowledge in laboratories run by the CSIR. The problem really is how to bring out the stock of scientific knowledge into application for the benefit of the people. I believe, not more than ten or fifteen per cent of the scientific knowledge that we have actually acquired is devoted to practical purposes benefiting the lives of the people. I remember, when I was Minister of State for Science and Technology, we used to talk about cooperation between the universities, laboratories, the industries and agriculture. That cooperation has been developing, but much too gradually. On the other hand, in certain fields of science, the frontier areas of science, where we have concentrated our attention, we have achieved magnificent results equal to any world standards. On the other hand, in certain fields of science, the frontier areas of science, where we have concentrated our attention, we have achieved magnificent results equal to any world standards. In the area of space science, in the area of atomic energy, missile development, electronic development, we have reached the stage of any other developed country, and that, in spite of the many restrictions, many sanctions that have been imposed on use for the transfer of technology since 1974.

We can be proud of these achievements. But, at the same time, for uplifting the general status of the lives of the millions of people in this country, what is even more important is to apply on a wide-scale the immense knowledge and expertise we have gathered and is lying dormant either in the minds of experts or in the great laboratories that were built up. There seems to be a gap between plan and action generally in our country. I do not know what is the reason for this. May be the traditional system of our education. While it was very elevated, very philosophical, reaching out for the stars and heavens — prime sequence of the universe. But we used to stand away from using our hands. Manual work was always a bit of an anathema in Indian society. I think that impeded the implementation and the application of knowledge for the benefit of the common people and for the country as a whole.

Swamy Vivekananda once said, that our religion is in the kitchen, our God is in the cooking pot and, we say, I am holy, do not touch. This approach, inherited approach, a part of our society, has impeded the application of knowledge to social and general purposes in our country. In fact, the educated classes in our country were isolated from the common people. Rabindranath Tagore once described the educated classes in India to a second storey in an old building that was added on. And, he said, but unfortunately, the architect, while adding the second storey, forgot to build a staircase between them. So, there was hardly any lively communication between the educated classes in India and the masses of our people. They were alienated from the people. In fact, the educated young men, I would say, were alienated even from their families, from their parents, who did not have the benefit of higher education, they found it difficult to converse with them, difficult to deal with them because of the gap in knowldege, education, even between the parents and the children. It is this gap we must fill, and in that context, the pledge the successful candidates today have taken to do their duty to society and to serve the people is an immensely significant pledge. Our country is an infinitely diversed country. In fact, during the last two days, I was in Assam — I found how infinitely diversed Assam is. And we say, so the whole of India is even more diversed than Assam. But through all this diversity, there runs a golden thread of cultural unity, a thread of moral unity, assimilational unity and it is that which make us cohere as a nation.

And, while we learn science, technology, environment and all the great subjects in the world, we have to remember that we have to learn the art of living with our neighbour, living with other religionists in a wide country of great disparity. I think, this art Indian people have learnt naturally through centuries, millennia of growth experience. This experience we have gathered in co-existing with differences, in enjoying and withdrawing in differences is an asset and not a hindrance. This heritage of ours must not be allowed to be damaged by modern developments.

It is a fact that in India, after we became independent, we saw many divisive movements. In Tamil Nadu in the south, in Punjab and in other states, there were such movements. But they all were finally settled harmoniously because people over there in different parts, realised that their future, their prosperity, their destiny lay with the whole of India. Ultimately, we are so interdependent by economics and so tied together by the threads of culture that we can break this thread only at the expense of our own happiness, our own prosperity and our own future. And, that is why I feel so happy today to stand here at this Central University and see the students taking their degrees for the first time from this university. It is really a historic occasion at which we should rejoice.

GAUHATI UNIVERSITY :
GUWAHATI-14
Advertisement No. T/98/2

Applications in the prescribed forms for the following posts are invited for Kokrajhar Campus of the Gauhati University.

Prescribed application form may be obtained from the office of the undersigned (establishment branch) on payment of Rs. 25/- (Rupees twenty five) only in the University Cash Counter or on requisition, accompained with a crossed Demand Draft (SBI) of Rs. 25/- (Rupees twenty five) drawn in favour of the Registrar, Gauhati University, Guwahati-14 on or before 25.1.99 during office hours.

The duly filled up application with full particulars in quadruplicate along with an application fee of Rs. 75/- (Rs. 33/- in case of SC/ST Candidates) be paid in the manner indicated above must reach the undersigned on or before 16.2.99.

Incomplete applications or applications received after the last date will not be entertained.

Money order, Indian Postal Order as application fee and photostat copy of the prescribed application form will not be accepted.

Persons in employment should apply through proper channel or furnish "No Objection Certificate" from their employers.

Candidates shall be required to appear before the Selection Committee at their own cost, if and when call for.

Sl. No.	*Name of Post*	*Deptt.*	*No. of Posts*	*Field of Specialisation*
1.	Reader	Assamese	1	Open
2.	Do	Bodo	1	Open
3.	Do	Economics	1	Open
4.	Do	English	1	Open
5.	Lecturer	Assamese	1	Open
6.	Do	Bodo	2	Open
7.	Do	English	2	Open

Candidates must write "For the post of ______________________ Kokrajhar Campus" in an outer cover duly addressed to the undersigned.

M.C. Sarma
REGISTRAR

Symposium on Solid State Physics

Top scientists of the country and abroad expressed the view that India needs to provide impetus to its nuclear programme for meeting the security needs as well as energy fuel requirements of the country. A cross section of over 300 physicists, who had gathered at Kurukshetra to attend an international symposium on solid state physics, expressed the view that India was self-sufficient as far as nuclear power production was concerned. It had complete know-how of the nuclear cycle, starting from mining of uranium to fuel production and fabrication of reactors.

A section of scientists maintained that research in solid state physics should be strengthened at the grassroot level. The younger generation should be attracted towards the study of physics. Besides, more emphasis should be laid on the production of nuclear energy for meeting the increasing power requirements of the country.

Amongst the noted scientists who dialated on the progress made in the field of solid state physics, Dr S.K. Sikka, Director, S.S. & S.G. of the Bhaba Atomic Research Centre, (Mumbai) stated that solid state physics had played a yeoman's role in the Pokhran blasts. Dr Sikka, who was mainly responsible for the simulation of the three blasts at Pokhran, expressed the view that India had carved out its name amongst the top nuclear powers of the world. Dr. Sikka wanted that more emphasis should be laid on the study of solid state physics.

Dr. P.S. Goyal, Director, Inter-University Consortium for Department of Atomic Energy Facilities, Mumbai Centre, maintained that India had the full capability of handling nuclear waste. "We have our own reactors for power production. We know the mining of uranium to fuel production and are completely self-sufficient in the field of nuclear energy", Dr. Goyal stated. He maintained that as research facilities were very expensive it was difficult for the universities to build such facilities. He, therefore, suggested that centralised facilities where all scientists should come to work and share their experiences should be created.

Dr. M.L. Ranga, Vice-Chancellor of Kurukshetra University, stated that ancient Indian texts were full of instances where the country had achieved glory in the field of nuclear science. He maintained that Rishi Karad was the first seer who talked about nuclear energy and atomism in *Vashisht Darshan*. Dr. Ranga maintained that it was Dr. James Franc of Germany who got cue from *Vashisht Darshan* and supported the theory of Atomism of the Indian sage. Dr. James Franc was later awarded Nobel Prize for this in 1925. He wanted the scientists to delve deep into the ancient Indian texts to update their energy.

Prof. M. Lindroos of the Tempere University of Technology (Finland) maintained that from the environmental point of view, India should go whole-hog for the production of nuclear power. As India was a very large country, it needed to have a comprehensive nuclear programme. Prof. Lindoors stated that Finland had four reactors which met 30 per cent of the electricity requirements of the country. Nuclear power production was the safest way to meet the energy requirement of any country in order to keep its ecology pollution-free. Dr. B.K. Godwal, convener of the symposium, maintained that the country was self-reliant in the field of applied research which was required for various applications of nuclear energy.

Prof. N.D. Sharma, Chairman of the Department of Physics, Kurukshetra University, and Local Convener of the seminar, stated that the present seminar had brought international recognition to the Department of Physics of this University. The scientists here were going to receive special attention from the Department of Atomic Energy as well as Department of Science and Technology. Dr. Sharma called for more interactive-collaborative work with the Bhaba Atomic Research Centre and the Department of Atomic Energy at Indore and Mumbai.

Prof. Priya Darshan Vashishta, Lovisian State University, USA, stated that the development of new efficient computational algorithems and massively parallel computers would make the production of material properties possible prior to actual synthesis. He stated that future developments in the field of solid state physics would make it possible to synthesise materials with desired properties for high temperature and high pressure applications.

Prof. Vincent Mckoy, Professor of Theoretical Chemistry at the California Institute of Technology, gave a lecture discussing his work on using large-scale parallel computers to obtain the basic data on electron collision with gases used in semiconductor manufacturing. This data is needed to help improve the simulations of plasma processes and reactors that are widely used in the production of integrated circuits.

Human Development Index

The economists, statisticians and social scientists at the Institute of Development Studies (IDS), Jaipur, have developed a Human Development Index as part of a project to formulate the indicators which may be useful as instrumentalities for assessment and planning in various sectors. Linking development with equity, justice, quality of life and dignity, it will help evolve effective schemes at the district level.

The human development index (HDI) at the district level has been developed taking into account the process, depth and meaning of social realities. It has treated education, health and per capita income as the key variables. It will help provide authentic data for planning, programme interventions, resource allocation and monitoring.

Prof. N.K. Singhi, Chair Professor at the IDS, giving details of the index at a State-level consultation on rural development and role of Panchayati Raj institutions organised at Jaipur, said it would portray not only the facts of representation but also the facts of behaviour, which are often missed by the quantitative data.

The district-wise human development index was inspired by the HDI developed by the United Nations Development Programme (UNDP) in its first human development report published in 1990. However, it has been modified wherever necessary, depending upon the availability of district-wise data.

The UNDP index had calculated human development as a measure of education, health and income of nations. The basic construction of HDI has not changed in the past one decade, though many modifications have been made to the way calculations are undertaken to make the index more reflective of human development.

For preparing the index, the team of experts undertook a study of district-level data from various sources in the Government and non-Government institutions and publications. During this extensive exercise, the team was able to select the data which could be utilised in spite of the problems concerning availability and reliability of data in the districts.

Prof. Singhi said though there was a great deal of seriousness in the use of data as State-level indicators for planning, there was hardly any methodical work for the districts because districts at present do not allocate resources in a significant way.

In the absence of the studies, estimates and surveys made at the district level similar to those at the national and State levels, it was extremely difficult to make the district level estimates of incomes, district domestic product, etc.

The HDI calculated for all the 31 districts for Rajasthan, like the HDI developed by the UNDP, looks at the status of education, health and income in each district, and then ranks them on the combined status in all the fields. Prof. Singhi was emphatic that the data used for such calculations should not be used in isolation from the index, because much of the data used was relevant in comparing the districts.

The index has used literacy as one of the two parameters for education. Literacy rate for the population was computed as percentage share of all literates in a district over the total population of people above six years of age in the district.

On female literacy, Prof. Singhi said it was a critical indicator of education and of the welfare of a family and children. The index uses female literacy with literacy of total population to get a better picture of a district's status in literacy.

The experts also used both the life expectancy and the infant mortality rate as health parameters to access health status. For the target maximum of infant mortality rate, the team has used the figure of 60 per 1,000 live births, drawing from the national goals of reducing it by the turn of the century. Similarly, the figure of 65 years was used as the target maximum for life expectancy. While UNDP uses "adjusted per capita income for countries" to calculate the index for income, the IDS team has used per capita income derived from the net State domestic product calculated by the State Government's Department of Economics and Statistics for its use.

The indices calculated separately for health, education and income were later combined in simple average to get human development index for all the districts. Based upon these formulations, Sriganganagar and Hanumangarh districts with 0.58 points have been placed at the first rank, followed by Kota and Baran.

Dholpur, scoring 0.24 points, was ranked lowest among the districts in Rajasthan. The average health index for the State was calculated at 0.50, average education index at 0.24, average income index at 0.66 and the average human development index at 0.47.

The data, on the basis of which calculations were made, have revealed that the highest life expectancy of more than 65 years has been reported in Bikaner district, where the infant mortality rate is also the lowest in the State.

The districts with more than

45 per cent literacy rate are Ajmer, Jaipur, Kota, Baran, Dausa and Jhunjhunu, while it is less than 30 per cent in Banswara, Barmer and Jalore. The female literacy is the highest in Ajmer district.

Sriganganagar and Hanumangarh, having been ranked at the top in the HDI, have also recorded the highest per capita income of more than Rs. 6,000. The per capita income is also high in Bundi, Kota, Sirohi and Baran, and is the lowest in Dungarpur and Sikar, where it is less than Rs. 3,000.

PG Course on AIDS

The Indian Medical Association (IMA) will soon introduce a postgraduate course in HIV/AIDS and sexually transmitted diseases for practising physicians all over the country which will also be recognised by the Medical Council of India.

This decision is reported to have been taken by the IMA after a joint meeting with the National AIDS Control Organisation (NACO), Unicef, National Institute of Communicable Diseases and World Health Organisation.

"This course which shall be of six months duration will be a certificate course," said an executive body member of the IMA, Dr. Sudipta Ray.

The course is likely to commence from January '99.

"Though NACO organises training programmes for doctors and para-medical staff, those are very short-term programmes and it is not enough for the doctors," said Dr. Naresh Goel, who is the project officer for this course of the IMA.

He also said that the existing medical syllabus which is taught in different universities all over the country does not include this subject as a part of its curriculum.

"This course will definitely help the doctors to get a structured course on the subject which will help them to deal with the issue both medically and socially," said the general secretary of the Indian Medical Association, Dr. Prem Agarwal.

The course consists of 20 modules. "This will be a correspondence course and one expects that more than 2,000 doctors should enroll in this course," said Dr. Goel.

He also said that a pre-test module would be sent to the candidate following which five modules would be sent.

"The pre-rest module would be essential to test the existing knowledge of the doctors," said Dr. M. Murali, a member of the Tamil Nadu Branch of the IMA, who is involved in the formation of this course.

"This course is essential in our country, after all, a new survey of the United Nations AIDS Society reveals that almost half a million people are infected with HIV in the state of Tamil Nadu but the infection rate is three times higher in the villages than in the cities," he added.

"The problem is just not centred on the treatment of this disease. The problem is the attitude of the doctor meted out to such a patient.

This course will immensely help all those doctors who nurture some kind of a bias regarding this disease," said Dr. Manish Sarawgi, a doctor from Mumbai.

He also said that the success of this course will definitely help the Medical Council of India (MCI) to take a decision on whether to introduce this course as a part of the medical syllabus all over the country.

The IMA is also going to hold talks with the MCI to incorporate this course in the medical syllabus.

Human Rights and Education

Over the years, the National Human Rights Commission (NHRC) has been relentlessly pursuing the need for introducing human rights in the curriculum for various Postgraduate and Undergraduate courses and in 1998, it made an all-out effort to bridge the 'academic' gap between human rights and education.

In early 1998, the NHRC Chairperson, Mr. Justice M.N. Venkatachaliah, wrote to the Vice-Chancellors of various universities and the UGC in this regard.

As a result, a number of universities have introduced courses on human rights and the UGC has worked out a structured syllabus for various Postgraduate and Undergraduate level courses on human rights. The UGC has also identified 10 universities which will be aided in establishing their faculties for human rights education. In the light of experience in the administration of the Protection of Human Rights Act, 1993, the Commission felt that a second look was necessary on the structural inadequacies in the consecutive law, and appropriate changes were required to make it more effective.

So, it has set up a high-level advisory committee headed by the former Chief Justice, Mr. A.M. Ahmadi, to consider the various aspects to the Act. The Committee has sought various views and suggestions of human rights activists, Non-Governmental Organisations and the general public in this regard.

In a major effort to promote the human rights education, research and training, the Commission has set up an 'Institute of Human Rights Education, Research and Documentation' at the National Law School of India University, Bangalore. A chair on human rights has also been set up in the university with the assistance of the Commission.

In 1998, a four-day South Asia workshop on human rights education in schools was organised by the Commission along with the Asia-Pacific Human Rights Documentation Centre in New Delhi. It was attended by representatives from Japan, Pakistan, Sri Lanka, Bangladesh, Nepal and various other educational institutions and gave a forward push to the pursuit of human rights education.

Sustenance to Creativity

India Foundation for the Arts (IFA) is an independent, professionally managed, national grant-making institution. Given the richness and diversity of the arts in India, IFA seeks to provide sustenance to creativity, collaborative work and critical reflection.

Twenty-four grants awarded earlier under the arts research and documentation programme supported the study of subjects like compositions in Carnatic music, popular and commercial art, craft traditions and lifestyles, women photographers, architectural history, mural and miniature painting, and the traditions of Indian sculpture. This list is only indicative of the diversity of interest generated by this programme and the range of the projects it attracts.

IFA now plans to offer a third round of grants for research and documentation, and invites applications from individuals and organizations.

The arts are interpreted widely to include the written, the painted, the crafted, the performed, the broadcasted, and the filmed: both the traditional and the modern.

The programme envisages not only support for the documenting of histories, but also investigation and interpretation of arts processes, comparative analyses, and theoretical research. IFA encourages efforts directed towards fostering critical attitudes and appreciation with regard to arts practices in the country, and strengthening methodology in any area of the arts. It also seeks to encourage the examination of the arts in relation to other areas of study.

IFA attaches importance to research that investigates marginalized or relatively unexplored areas of concern, both historical and contemporary. Research proposals may also be collaborative or interdisciplinary in nature.

IFA also envisages seed grants for preparatory research towards exhibitions, literary publications including fiction, educational audio-visuals, films/videos, stage productions, performance tours, workshops etc.

Proposals that address the practical concerns of the arts community, like support systems for artists or issues of cultural policy, are welcome. IFA also invites proposals concerning language development activities that have a bearing on the arts.

IFA interprets documentation to include films/videos on arts subjects and systematic archiving of valued cultural materials and collections, which are placed in the public domain and address the interests of relevant audiences and users.

Documentation proposals should be grounded in a well-articulated research perspective.

All proposals must necessarily be accompanied by a summary of not more than 750 words highlighting the salient features of the project.

The duration of the proposed project may be two years or less. Support for up to Rs. 5 lakh may be requested.

Applications should reach IFA by April 30, 1999. Grant awards will be announced on or before September 30, 1999.

Further information may be had from the Executive Director, India Foundation for the Arts, Tharangini, 12th Cross, Raj Mahal Vilas Extension, Bangalore-560 080, Tel/fax : 080-331-0583/ 331-0584, e-mail : ifabang@blr.vsnl.net.in

Seminar on Chemical Education

National Academy of Chemistry & Biology (India), Lucknow proposes to organise a National Seminar on Chemical Education : Alarming Decline in Talent and Enrolment at Lucknow on 12-14 Feb. 1999.

Chemical sciences are the back bone of any development activity. No matter what we do or plan to do, we cannot do it without recourse to chemical sciences.

At present adequately trained chemists and technologists are not available in the required strength. Why and how this situation has developed. The National Seminar will debate the issue and explore ways so that the present drift can be halted.

The Seminar will examine :

Role of Teachers/Academicians to improve the situation; How authorities can improve the situation; Why students are not opting for Chemical Sciences; Views of eminent educationists; Views of scientists working in R&D Centres of CSIR, DST, CST, UP, etc; Should chemistry courses at U.G. & P.G. level be restructured; Role of Funding Agencies; Role of State and Central Governments.

Further details can be had from Prof. S.R. Varma, Director, National Seminar, Chemistry Department, Lucknow University, Lucknow-226 007. email-profrsv @lw1.vsnl.net.in bangwan@ hotmail.com Ph : 323421 OR Dr. A.P. Singh, B-711/B, Mahanagar, 'K Park' Lucknow-226 006, Tel. : 329520.

Workshop on Old Scripts & Manuscriptology

The School of Vedic Studies of the Rabindra Bharati University organized a workshop on Some Old Scripts and Manuscriptology recently. The object of the workshop was to impart instruction in Newari and Medieval Bengali scripts, often used in manuscripts of Sanskrit texts, and to discuss the principles of textual criticism (advanced level, for those who have previously participated in similar workshop) and also to demonstrate their practical application. Twenty scholars from different institutions participated in the workshop.

The workshop was inaugurated by the Vice-Chancellor, Dr. Shubhankar Chakrabarti. Address of the Chief Guest was delivered by Prof. Dr. Bratindra Nath Mukherjee (Calcutta University), and Dr. Narendra Nath Bhattacharya (Calcutta University) spoke as the special guest.

The resource persons included Dr. Ratna Basu, Calcutta University; Prof. Dr. Debnath Bandyopadhyay, Rabindra Bharati; Dr. Kananbehari Goswami, Rabindra Bharati; and Prof. Dr. Samiran Chandra Chakrabarti, School of Vedic Studies, who was also the Director of the workshop.

The valedictory session was chaired by Prof. Dr. Satya Ranjan Banerjee, while Dr. Narendra Nath Bhattacharya of Calcutta University was the chief guest.

Calicut Varsity Information Centre

A new Information Centre of the University of Calicut has been inaugurated by Dr. K.K.N. Kurup, the Vice-Chancellor at Vatakara. The Vatakara Municipality has provided the building for the centre and also an amount of Rs. 10 lakhs as initial expenses for starting a department there. It is the first time that such an endeavour is started with the assistance of a local self body.

Thiruvalluvar Award 1999

Dr. V.C. Kulandai Swamy, former Vice-Chancellor of Anna University and India Gandhi National Open University, has been named by the Government of Tamilnadu for the Thiruvalluvar award for 1999. Enhanced from Rs. 20,000, the award carries Rs. one lakh and a sovereign.

We Congratulate...

1. Prof. S.P. Hiremath who has been appointed Vice-Chancellor of Kuvempu University, Shimoga.

2. Prof. D.P. Singh who has been appointed Vice-Chancellor of Lucknow University, Lucknow.

News from Agricultural Universities

Breaking Yield Barrier

The scientists at CCS Haryana Agricultural University are up on heels to break yield barriers of wheat in the state and make the farmers earn more profit from rice-wheat crop sequence.

In recent manoeuvres these scientists have focused on popularizing among farmers sowing of wheat with a newly invented machine called the Zero Tillage Seed-cum-Fertilizer Drill and control of a dreaded weed, *Phalaris minor* of wheat.

A team of agronomists under the leadership of Dr. R.K. Malik, Senior Weed Scientist and leader of the Australian Sponsored project on the control of *P. minor* weed had laid a number of demonstrations on farmers fields, during the current rabi season, in major rice-wheat growing districts of Hisar, Kaithal, Kurukshetra, Fatehabad and Karnal covering an area of about one thousand acres.

The machine, according to Prof. J.B. Chowdhury, Vice-Chancellor, saves precious time of the farmers and reduces cost of field preparation, besides checking the growth of the weed *P. minor*, commonly called Kanki or Mandusi.

He said the wheat production in the major wheat producing states of Haryana, Punjab and western U.P. was greatly hampered mainly due to increased infestation of fields with herbicide resistant population of this weed. The weed could reduce the wheat yield from 30 to 80 per cent, and in exceptional cases total crop failure, he added.

He said paddy-wheat crop sequence in Haryana occupied over nine lakh hectares of cultivable land, while about 20 lakh hectares were under wheat crop.

Prof. Chowdhury said this method of sowing would prove a boon, as it drastically reduced the population of the weed, which later could easily be managed through herbicidal sprays.

Dr. Malik said that the response of farmers about sowing of wheat with zero-tillage seed drill in the areas where demonstrations were held was enthusiastic. Besides saving time, power and fuel, the machine resulted in excellent crop stand. It also effectively controlled the population of the weed, he added.

Apart from this the method expedites wheat sowing and saves about Rs. 600 per acre as compared to conventional sowing.

NAAS Fellowships

Prof. J.B. Chowdhury, Vice-Chancellor, CCS Haryana Agricultural University (CCSHAU), a renowned Cytogenecist and two other scientists of the university, Dr. R. Pandey, National Professor, Veterinary Sciences and Dr. S.K. Bhatia, Professor, Animal Sciences have been awarded the prestigious Fellowship by the National Academy of Agricultural Sciences for their outstanding contributions in the field of agricultural sciences.

The Academy has also awarded the Recognition Award to Dr. Randhir Singh, Professor of Biochemistry for his laudable contribution in the area of plant improvement.

The National Academy has appreciated the contributions made by Prof. Chowdhury and his distinguished team of scientists. According to the official communique issued by the Academy, Professor Chowdhury has been among the first few scientists of the nation who established a strong research group on tissue culture, biotechnology and genetic engineering for improvement of commercial and field crops. Dr. Chowdhury has also been successful in developing micro-preparation technology for date-palm and sugarcane. He has also developed the protocols for the production of transgenic rice and chickpea lines by *Agrobacterium* mediated gene transfer and particle gum methods.

Dr. R. Pandey, who is an eminent Virologist of international repute made significant contributions in the field of Animal Virology in general and diagnostic and molecular biological aspects of rotavirus associated diarrhoea in domestic animals.

Dr. S.K. Bhatia, who has been the awardee of prestigious Rafi Ahmad Kidwai Memorial Award and Dr. V.D. Kashyap Gold Medal has contributed significantly in the field of ruminal biochemical, microbiological and physiological differences for discernible nutrition of buffaloes and other fundamental and applied nutritional aspects of domesticated ruminants.

News from AICTE

Emerging Trends in Technical Education

The All India Council for Technical Education (AICTE) is seeking to make the technical education syllabus relevant to the present economic context by making it more market driven, AICTE Chairman Dr. S. Rame Gowda said in Bangalore recently.

At the same time the AICTE is also working on making the technical courses more student-friendly by introducing flexibility enabling vertical mobility and horizontal exit as well as horizontal injection. This will be far removed from the water-tight suffocating system in vogue today.

Delivering the 13th silver jubilee commemoration lecture of the Karnataka Electricity Board Engineers' Association on "Emerging trends in technical education", Dr. Rame Gowda said that the AICTE is seeking to make technical education more industry and consumer oriented.

Elaborating on the horizontal exit and vertical mobility concept, he pointed out that at present a student gets his degree only after he or she completes a four-year engineering course. However, if for some reason a student cannot appear for examinations then he loses a lot of time studying.

In the new system proposed, a student will be given some kind of qualification after each year of education so that after each level there is some recognised level of competence. For example, he may be given a certificate after the first year and diploma after the second year. Similarly, the system will also enable people to come in at various levels for continuing education. Dr. Gowda said a syllabus for this kind of system is being worked out at present.

The AICTE chairman stressed the need for a market-driven education in the present economic contest and liberalised regime. If the education system, especially the technical education, does not keep abreast of the latest then the country will be swamped by foreign products. The challenge is not only to produce but to produce well enough to export.

The challenge is all the more greater as the era of protectionism is over. No longer can Indian industry be complacent by making money through second hand technology obtained from abroad. Future technologists cannot be expected to work miracles if they are taught by teachers relying on notes passed on by their teachers to them, he pointed out.

Dr. Gowda also pointed out that technical education can no longer seek to make an expert in one field but rather an engineer now has to be multi-disciplinarily competent. In this light, he urged the increased use of the internet, intranet and the extranet which enables access to information which the professors may not be able to keep-up with.

Evaluating Training!

Mohammad Miyan*

Nizam Ilahi (1997). Teacher Education in India, (INSET). New Delhi, APH Publishing Corporation. Pp.xxvii+262. Rs. 500/-.

The national concern for improving quality of education has generated variety of efforts and activities. Having identified an angle, the 'lack of motivation, commitment and competencies' of teachers and believing that "improvement" is 'through systematic inservice programmes for teachers and school administrations", 'a critical study of inservice teacher education programmes of SCERT Delhi' was researched at the doctoral level so as 'to look into the meaning, philosophy and purpose of INSET afresh in the Indian context and discuss recent trends and innovations'. The book is in six chapters, with the analysis elaborated in over 270 tables.

The introductory chapter attempts to first establish the relevance of teachers, their roles and need for their professional growth in the form of inservice education after which its scope has been defined. The interpretation of staff development and inservice education has also been covered ultimately concluding the latter is an 'input' in human resource development. Subsequently the 'need and importance of inservice education' is discussed taking recourse to Tagore, the 3 major commissions on education since India's independence, international deliberations and documents. The section on 'scope' runs through various types and their categorisations. The 'historical perspective' with subsections, traces the significant efforts in the entire area of teacher education in the main, right from Macaulay: 1835 and ending with the Constitutional Amendment of 1976. Strangely, the POA finds no place in this section which runs into six pages, in fact the reference to NPE 1986 indicates the emphasis on teacher education has not been understood in its true spirit; To quote, "......and the National Policy on Education (1986) are no doubt very readable but they have mainly repeated and laid greater emphasis on the existing programmes. They have rightly emphasised the need for constant inservice education of teachers" (P. 18) its mention could have been left out here as it is referred to later in this section on trends. Then, its sub-sections, 2 in number, are on some important agencies of Inservice Teacher Education like NCERT, SIEs, NIEPA, CBSE, KVS, Teachers' Colleges, Teachers' Associations, Extension Education Deptts., CCEs and others and the New Trends in the field of Inservice Teacher Education. Unfortunately, a glaring gap is the SCERTs and their evolution. These two sub-sections, in fact this section as whole (historical perspective) is a very helpful compilation wherein the change in policy emphasis may be called out by the reader. This compact section could be analysed by teacher educators in the making! The next section, Role of SCERTs in Inservice Education is a section by itself, though numbered incorrectly, followed by another on SCERT, Delhi encompassing sub-sections on its objectives, administrative set-up, academic units, its linkages and collaboration with other educational organisations each of which has been elaborated upon, alongwith its achievements and ' inservice education and training' programmes further including inplant training of vocational students, research and development with concerned activities explained in 13 sub-sections. The need of the study starts with NPE' 86 as a 'landmark', reference to the chapter on Teachers and their Training, autonomous status of SCERT in 1988 as a consequence of the policy resolution, the numbers trained by SCERT with a reference to the fact that all its programmes were not evaluated by the participants on a proforma which finds on place in the study. The chapter ends with the main objectives of this study (the doctoral research) and delimitations of the study.

This first chapter is an attempt at meticulously following the spellout of the phenomena under study. Unfortunately a major flaw is ignoring the need for establishing a case for taking up SCERT, Delhi for study; devoting a section

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Director, Distance Education Programme (DEP-DPEP), Indira Gandhi National Open University, K-3 Green Park, New Delhi-110 016.

to the role of SCERT in inservice education and their role expectations, areas of work, their number and evolution of each is referred to but the one under study finds no place there, probably because the next section is devoted to it. The reference to the evaluation proforma filled in by participants at the end of the programme intended for 'local' (in-house) consumption only and not made available to others alongwith absence of any study on' impact of inservice teacher education programmes conducted by SCERT for school teachers of Delhi' (P. 52) does not justify the present study particularly since the author was a staff member (Lecturer in SCERT, New Delhi) at that time (inner back flap of jacket). A review of related literature is undertaken by a researcher so as to serve purposes like understanding research and its trends in the area, to sharply limit/define aspects under study, to formulate the design of the study. Though the researcher-author has undertaken a review referencing is not uniform i.e. in places the title of the study is given, (P. nos. 62, 66, 67) while in others it reads as running matter (P. nos. 57, 58, 62); in places there is no reference to the university in which the research was undertaken (*Shankar, L.* p 65).

Since the researcher-author had earlier decided the area of study, there was no need to review the study by U. Sinha on the impact of teacher education programme on professional efficiency of trained and untrained teachers as it refers to pre-service training: only the second finding reveals the comparison is between trained and untrained teachers. Entire findings of studies reviewed find a place: in the study by SCERT, AP in 1980 (P. No. 67-68) topics in biology syllabus not being relevant to the age group of pupils. Though the studies abstracted are considerable neither an analysis of trends nor of utilisation of their findings for developing the design of the study under report has emerged from the effort though some have, perhaps been utilised (stated in chapter 3). Some instances to substantiate the latter conclusion are: the need for followup of inservice programmes (Sinha, P. 68); need to take up problems of Science teaching faced in class and improvisation of equipment (SCERT, 1982 P. 69); use of television for developing teachers in school (NCERT, 90 P. 69-70).

The third chapter on methodology briefly sets out the relevant details. 'The fourth and fifth chapters discuss the reactions of i) trained graduate and postgraduate teachers of government and government-aided schools of Delhi, and ii) school teachers all of whom had attended atleast one inservice programme organised by the SCERT. The programmes for each of the two levels of teachers had emphasised enhancing their understanding of emerging issues, concerns and emphasis as well as their knowledge and methodology components. The aspects of the programmes both groups of teachers were expected to respond on were the physical facilities at the centre, timing of the programmes, the development of general awareness, pedagogical aspects and subject content covered and comments thereon, transaction strategies adopted, the reference/study material provided, duration of the programme, sessions per day and their duration; they were also asked to comment on usefulness of the emphasis on aspects given as well as what they desired, their ability to follow up, and adequacy of travelling allowance in that order. Some very interesting point to resource persons in the future — those from school system and not from university system.

The last chapter, Conclusions, Implications and Suggestions lists out the findings, section-wise; the summary of findings should have been uniformly presented in terms of percentages right through rather than giving some in mere numbers. Implications are drawn for the logistics without definite pointers for the programme/coverage. Some suggestions are also given: for similar studies, on larger samples, in DIETs and IASEs, some effectiveness and impact studies. Unfortunately, the effectiveness/evaluation of inservice education of teachers is viewed as, mere paper-pencil reactions and that too by participants only.

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Kalamassery
Date 11-12-98 **MANAGER**

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities (November-December 1998)

SOCIAL SCIENCES

Anthropology

1. Mishra, Bharati. **A study of genetic demography and variability in tribal population: The Bhainas of Madhya Pradesh.** (Dr P N Sahu), Department of Anthropology, Sambalpur University, Jyoti Vihar, Burla.

2. Mishra, Jaya Shree. **Social life of girl child in a Scavanging community: Data from Sambalpur town of Western Orissa.** (Dr D K Bahera), Department of Anthropology, Sambalpur University, Jyoti Vihar, Burla.

Commerce

1. Mahadeva, M C. **A performance evaluation of District Industries Centre in Mysore District.** (Dr Nanje Gowda K), Department of Commerce, University of Mysore, Mysore.

2. Muniraju, M. **The role of financial institutions in the promotion and growth of brick industry in Bangalore and Kolar districts of Karnataka.** (Dr K Aswathappa), Department of Commerce, Bangalore University, Bangalore.

3. Roy, Chinmoy. **Working capital management of public enterprises : A study on paper industry.** (Prof S S Khanka), Department of Commerce, Assam University, Silchar.

Economics

1. Chandrasekharan Nayar,P. **Growth differences in South Asian countries: An exercise in political economy.** (Dr P P Pillai), Department of Economics, University of Calicut, Calicut.

2. Desraj. **New technology and changing agrarian relations.** (Dr S R Ahlawat), Department of Economics, Maharshi Dayanand University, Rohtak.

3. Govindu, B. **Women empowerment and socio economic development: An evaluation study of the DWCRA Programme in Vizianagaram District, AP.** (Prof G Ramachandrudu), Department of Economics, Andhra University, Waltair.

4. Gureja, Kamlesh. **Motives and determinants of international direct investment in India.** (Prof S K Bedi), Department of Economics, Maharshi Dayanand University, Rohtak.

5. Neena. **Trade liberalization and balance of payments in India.** (Dr S K Bedi), Department of Economics, Maharshi Dayanand University, Rohtak.

6. Prabhakar, Rajguru Hemant. **Capital requirements for modernization of agriculture in Maharashtra.** (Dr S N Tilekar), Department of Economics, Mahatma Phule Krishi Vidyapeeth, Rahuri.

7. Sapra, Sushil. **Consumer behaviour in India.** (Dr D C Vashist), Department of Economics, Maharshi Dayanand University, Rohtak.

8. Satyawart Singh. **Regional disparities in Haryana.** (Dr Y S Dahiya), Department of Economics, Maharshi Dayanand University, Rohtak.

9. Singh, Sabina. **Conjunctive use of surface water and ground water in Haryana agriculture.** (Dr I S Hooda), Department of Economics, Maharshi Dayanand University, Rohtak.

10. Vijayalakshmi, K. **Linkages in industrialisation: A case study of construction industry.** (Dr Kamala Subramaniyam), Department of Economics, Osmania University, Hyderabad.

Education

1. Anitha, K. **Educational planning for school education: A case study of three districts in Karnataka.** (Dr Nagaraju C S), Department of Education, University of Mysore, Mysore.

2. Balwan Singh. **Study of scientific temper in relation to personality and environment.** (Dr Ashok Kumar), Department of Education, Maharshi Dayanand University, Rohtak.

3. Charhate, Madhukar Bhaurao. **Nagpur vibhagateel shahari agrani gramin bhagat astitvat aslelya uchch madhyamik va madhyamik shaleteel kridha, ranjan ani sharirik shikshan karyakramacha tulanatmak.abhyas.** (Dr Shridarshan Desai), Department of Education, Nagpur University, Nagpur.

4. Durga Rani, Ch. **A study of educational aspirations and scientific attitude of urban students.** (Dr S Mary Jones), Department of Education, Nagarjuna University, Nagarjunanagar.

5. Haseenuddin. **A comparative study of cognitive and non cognitive personality dimensions of visually impaired students studying in special and integrated educational settings.** (Dr Nabi Ahmad), Department of Education, Aligarh Muslim University, Aligarh.

6. Kannan, V S S. **A study of the educational technology inputs in B Ed curriculum in Tamil Nadu.** Department of Education, Alagappa University, Karaikudi.

7. Qureshi, Arjumand Bano. **A status study of practice teaching in secondary training colleges.** (Dr J Nagalakshmi), Department of Education, Osmania University, Hyderabad.

Home Science

1. Anju Kumari. **The quantitative and qualitative parameters associated with the honey based fruit nectar.** (Dr Manoranjan Kalia), Department of Home Science, Himachal Pradesh Krishi Vishwavidyalaya, Palampur.

2. Mishra, Arvind. **Studies on rice bran oil.** (Dr Prabhakar J V), Department of Home Science, University of Mysore, Mysore.

Library & Information Science

1. Seetharam, Geetha. **Science indicators to study and analyse the scientific literature in food science and technology with an emphasis on CFTRI's research publications.** (Dr Ravichandra Rao I K), Department of Library and Information Science, University of Mysore, Mysore.

2. Upadhya, Padma V. **Development information support to rural end users.** (Dr Ravichandra Rao I K), Department of Library and Information Science, University of Mysore, Mysore.

Management

1. Farooquie, Jamal A. **Productivity improvement in small scale industries through financial incentives to workers.** (Prof Azhar Kazmi), Department of Business Administration, Aligarh Muslim University, Aligarh.

2. Sampath Lakshmi, N. **Performance of commercial banks with particular reference to public sector banks.** Department of Management, Alagappa University, Karaikudi.

Political Science

1. Bhujender Reddy, A. **The role of the Governor in Indian politics.** (Prof F D Vakil), Department of Political Science, Osmania University, Hyderabad.

2. Ghosh, Bandana. **Democracy, decentralisation and district administration in India: A study of a select district in West Bengal.** (Dr D J Bhowmik), Department of Political Science, University of North Bengal, Raja Rammohunpur, Distt Darjeeling.

3. Mohammad Naseem. **United Nations perspective of West Asian conflict since 1978.** (Dr Mohammad Gulrez), Department of Political Science, Aligarh Muslim University, Aligarh.

4. Raj Bala. **Legal and political status of women in India.** (Dr Subir Goswami), Department of Political Science, Maharshi Dayanand University, Rohtak.

Psychology

1. Daga, Navita. **Influence of social family role stress and social support on quality of life.** (Dr Akbar Husain), Department of Psychology, Aligarh Muslim University, Aligarh.

2. George, Mary Reeni M. **Frontal lobe contributions to memory.** (Dr C R Mukundan and Dr D Nagaraja), Department of Clinical Psychology, National Institute of Mental Health and Neuro Sciences, Bangalore.

3. Sharma, Mahendra Prakash. **Behavioural intervention with the aged.** (Dr H Mishra), Department of Clinical Psychology, National Institute of Mental Health and Neuro Sciences, Bangalore.

4. Srilatha, Juvva. **A study on the influence of family of origin on the quality of marital life.** (Dr Ranbir S Bhatti), Department of Psychiatric Social Work, National Institute of Mental Health and Neuro Sciences, Bangalore.

Public Administration

1. Janardhan, P. **Administration of protected water supply and sanitation programmes in rural Andhra Pradesh: A study.** (Dr V Shobha), Department of Public Administration, Kakatiya University, Warangal.

2. Venkata Rao, J. **Municipal Government and politics in Andhra Pradesh : A case study of Guntur Municipality.** (Dr E A Narayana), Department of Political Science and Public Administration, Nagarjuna University, Nagarjunanagar.

Sociology

1. Gupta, Shikha. **Shiksha ka dharmik manyatayon per prabhav: Shikshit Hindu mahilayon per adharit ek adhyayan.** (Dr C S S Thakur), Department of Sociology, Rani Durgavati Vishwavidyalaya, Jabalpur.

2. Kondaiah Ch. **Persistence and change : A study on Chenchus of Nallamala Forest in Andhra Pradesh.** (Dr T Lakshmaiah), Department of Sociology, Osmania University, Hyderabad.

3. Mukherjee, Papiya. **Mahila evam purush chikitsakon kee samajik, arthik sthiti ka tulanatmak adhyayan: Jabalpur Jile ke vishesh sandarbh mein.** (Dr P B Sengupta), Department of Sociology, Rani Durgavati Vishwavidyalaya, Jabalpur.

4. Rathore, Praveen Kumar. **Sarguja Jile kee Pando Janjati mein samajik parivartan.** (Dr P B Sengupta), Department of Sociology, Rani Durgavati Vishwavidyalaya, Jabalpur.

5. Shakuntla. **Changing patterns of family under the impact of technology.** (Dr B K Nagla), Department of Sociology, Maharshi Dayanand University, Rohtak.

OVERSEAS POST-DOCTORAL RESEARCH FELLOWSHIPS IN ENVIRONMENTAL ECONOMICS UNDER THE WORLD BANK AIDED INDIA CAPACITY BUILDING PROJECT

Applications are invited from suitable candidates for being considered for the award of overseas post-doctoral research fellowship in environmental economics (maximum duration of 10 months). These fellowships **are tenable at prominent foreign universities or environmental economics/economics research institutions** and are intended to strengthen research and teaching capabilities in India in environmental economics and provide opportunities for Indian scholars to improve their skills in this area through course work.

Indian citizens holding permanent positions in Indian universities, colleges or research institutions, with **a Ph.D in economics and below 40 years of age as on August 10, 1998,** are eligible for these research fellowships. Members currently serving or who have served the Expert Committee on environmental economics or members of the sub-committees, constituted under this programme are not eligible. Preference will be given to candidates who are teaching in an university or a college and have taken courses in environmental economics at the post-graduate level/have done teaching or research in that area. Preference will be given to candidates other than those who fall in the following categories :

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***Last Dates**

*For requesting for application forms : 9-2-1999

*For receipt of completed applications : 11-3-1999
by Member Secretary, EEOFC,

National Institute of Public Finance and Policy, 18/2, Satsang Vihar Marg, Special Institutional Area, Near JNU, New Delhi-110 067.

CURRENT DOCUMENTATION IN EDUCATION

A list of select articles culled from the periodicals received in the AIU Library during December 1998

EDUCATIONAL PHILOSOPHY

Capper, Colleen A. Critically oriented and postmodern perspective :'Sorting out the differences and applications for practice. **Ednl Admn Q** 34(3), 1998, 354-79.

Johnston, Rita. The university of the future : Boyer revisited. **Hr Edn** 36(3), 1998, 253-72.

Mayar, Frederico. The universal university. **Hr Edn Policy** 11(4), 1998, 249-55.

Roy, Sitansu. Educational thoughts of Tagore. **J of All India Assn for Ednl Research** 10(1-2), 1998, 23-7.

Sussmuth, Rita. The joint responsibility of politics and comparative educational studies for a human learning society. **Edn** 57, 1998, 7-15.

EDUCATIONAL PSYCHOLOGY

Bean, John P. Alternative models of professional roles : New language to reimagine faculty work. **J of Hr Edn** 69(5), 1998, 496-512.

Rajan, K M. Instructional use of analogy : A review. **Perspective in Edn** 14(4), 1998, 223-34.

Varghese, Ancey. Mastery learning. **Perspective in Edn** 14(4), 1998, 217-22.

EDUCATIONAL SOCIOLOGY

Robert, John and others. The effect of gender composition of faculty on student retention. **Eco of Edn Rev** 17(4), 1998, 429-39.

WOMEN'S STUDIES

Drew, Todd L and Worle, Gerald G. Gender based differences in perception of experiences in higher education : Gaining a broader perspective. **J of Hr Edn** 69(5), 1998, 542-55.

EDUCATIONAL ADMINISTRATION

Altbach, Philip G. Comparative perspectives on higher education for the twenty-first century. **Hr Edn Policy** 11(4), 1998, 347-56.

Duke, Daniel L. The normative context of organizational leadership. **Ednl Admn Q** 34(2), 1998, 165-95.

Etzkowitz, Henry and Leydesdorft, Loet. The endless transition : A "Triple helix" of university-industry-government relations. **Minarva** 36(3), 1998, 203-8.

Harman, Grant. The management of quality assurance : A review of international practice. **Hr Edn Rev** 52(4), 1998, 345-64.

Markandan, N. Globalisation of higher education. **J of Hr Edn** 21(2), 1998, 255-8.

Mawditt, Richard. Lest we forget. **Hr Edn Policy** 11(4), 1998, 323-30.

Plomp, Tjeerd. The potential of international comparative studies to monitor the quality of education. **Prospects** 28(1), 1998, 45-59.

Takwale, Ram. Partnership with foreign providers for extending higher education. **J of Hr Edn** 21(2), 1998, 151-63.

Taylor, Peter G. Institutional change in uncertain times : Lone ranging is not enough. **Studies in Hr Edn** 23(3), 1998, 269-79.

Winn, Bradley A and Cameron, Kim S. Organisational quality : An examination of the Malcolm Baldrige national quality framework. **Research in Hr Edn** 39(5), 1998, 491-512.

CURRICULUM

Sharma, R C. Curriculum development for distance education. **J of Hr Edn** 21(2), 1998, 235-9.

Whitston, Kevin. Key skills and curriculum reform. **Studies in Hr Edn** 23(3), 1998, 307-19.

TEACHERS & TEACHING

Banner, James M and Cannon, Harold C. The personal qualities of teaching. **Change** 29(6), 1997, 40-3.

Hativa, Nira. Lack of clarity in university teaching : A case study. **Hr Edn** 36(3), 1998, 353-81.

Mohanty, Sunil Behari. Innovations in teacher education. **J of All India Assn for Ednl Research** 10(1-2), 1998, 44-72.

Sharma, Deepa and Kamath Ravikala. Enhancing teachers creativity : A proactive approach for in-service training. **Perspective in Edn** 14(4), 1998, 213-6.

Sharma, S K. In-service training and assessment of teachers. **J of Hr Edn** 21(2), 1998, 217-23.

EDUCATIONAL RESEARCH

Colbeck, Card L. Merging in a seamless blend : How faculty integrate teaching and research. **J of Hr Edn** 69(6), 1998, 647-71.

Elzkowtiz, Henry and Kenelgar, Carol. The role of research centres in the collectivisation of academic science. **Minarva** 36(3), 1998, 271-88.

EDUCATIONAL TECHNOLOGY

Aldrich, Frances and others. Getting to grips with "interactivity" helping teachers assess the educational value of CD-ROMs. **British J of Ednl Tech** 29(4), 1998, 321-32.

Grementieri, Valerio. Innovation technology and higher education. **Hr Edn in Europe** 23(2), 1998, 169-75.

Lenn, Marjorie Peace. The new technologies and borderless higher education : The quality imperative. **Hr Edn in Europe** 23(2), 1998, 241-51.

Kadhiravan, S and Balasubramanian, N. Self-regulated learning and computer assisted instruction : Theoretical issues. **Perspective in Edn** 14(4), 1998, 207-11.

EDUCATIONAL EVALUATION

Kempner, Ken and Tayler, Craig. An alternative assessment to higher education outcomes : Differentiating by institutional type. **Hr Edn** 36(3), 1998, 301-21.

ECONOMICS OF EDUCATION

Ansari, M M. Educational unemployment and the emerging economy : Some perceptions. **J of Hr Edn** 21(2), 1998, 165-87.

INDIAN COUNCIL OF MEDICAL RESEARCH

Applications are invited upto **15th Feb., 1999** for the following posts at the Council's Institute/Centre :-

(A) ENTEROVIRUS RESEARCH CENTRE, MUMBAI : Deputy Director (One post). *(Scale of pay of* Rs. 14300-400-18300) *Qualifications & Experience : **Essential** :* (a) MBBS or M Sc. 1st class with 12 years research/teaching experience in fields like Microiology/Virology/ Epidemiology/ Biochemistry/Immunology/Molecular Biology/Biotechnology OR 10 years research/teaching experience for candidates possessing M.D./Ph D. degree in relevant fields. (b) Original work as evidenced by scientific publications in standard journals. ***Desirable*** : Research experience in the study of entroviruses and ability to guide post-graduate for research and managerial ability. ***Job Requirements*** : To undertake research on different aspects of entroviruses such as virological pathogenesis, epidemiological, immunological studies Besides, the incumbent will assist the Director in planning, executing and monitoring other activities of the Institute including adminstrative matters.

(B) MALARIA RESEARCH CENTRE, DELHI : Deputy Director (One post). *(Scale of pay of* Rs 14300-400-18300) *Qualifications & Experience : **Essential** :* (a) M B.B.S. with 12 years research/teaching experience in public health/epidemiology of vector borne diseases OR 10 years research/teaching experience in case of candidates possessing M.D./Ph.D (b) Original work as evidenced by publications. ***Desirable*** : Training and experience in epidemiology of malaria & other vector borne diseases. ***Job Requirements*** : The incumbent would be required to (i) carryout field investigations of Malaria epidemics in different parts of the country. (ii) Study the epidemiological profile and distribution of Malaria (iii) Help in malariogenic stratification (iv) Research on chemotherapeutic and parasitological aspects of malaria (v) Develop evaluation systems of malaria control strategies with different methods of malaria control. (vi) Participate in teaching programmes and (vii) any other duty assigned by the Director.

(C) NATIONAL INSTITUTE OF OCCUPATIONAL HEALTH (Candidates may be required to serve at any of the Centre at Calcutta, Ahmedabad or Bangalore) : Deputy Director (One post). *(Scale of pay of* Rs. 14300-400-18300) *Qualifications & Experience : **Essential** :* (a) MBBS with 12 years research/teaching experience in fields like Occupational Health/ Environmental Sciences/Epidemiology. OR M.D./Ph.D. In relevant areas with 10 years research/teaching experience. (b) Original research work as evidenced by scientific publication in standard journals. ***Desirable*** : (a) Research experience in field-based occupational and environmental health related studies (b) Managerial/Adminstrative experience. ***Job Requirements*** : To undertake multi-disciplinary research on different aspects of environmental and occupational health related problems in the Region. The incumbment is expected to assist the Director, NIOH, in planning, executing and monitoring the activities of the Centre (including managerial aspects).

(D) VECTOR CONTROL RESEARCH CENTRE, PONDICHERRY : Asstt. Director (One post). *(Scale of pay of* Rs. 12000-375-16500) *Qualifications & Experience . **Essential** :* M.Sc. (Ist class) in Medical Entomology/Zoology with 12 years research/teaching experience (and in case of candidates possessing Ph.D. 10 years experience is required in field of Vector brone diseases control. Experience in community based control programmes for vector borne diseases preferably filariasis is essential. ***Desirable*** : Experience in community based disease control programmes involving active community participation. Designing community oriented disease control programmes and their impact evalution. ***Job Requirements*** : Will include administrative responsibilities/ development planning and implementation of community directed control programmes for vector borne disease. Analysis of socio-economic factors and using this finding for packaging control tools for developing approriate control strategy. Epidemiological surveys in connection with vector borne diseases.

(E) NATIONAL INSTITUTE OF CHOLERA & ENTERIC DISEASES, CALCUTTA : Asstt. Director (Molecular Biology) (Two posts). *(Scale of pay of* Rs. 12000-375-16500) *Qualifications & Experience . **Essential** :* MBBS/M.Sc. (Ist class) in Life Sciences/Microbiology with 12 years research/teaching experience or M.D./Ph.D. with 10 years research/ teaching experience. Candidate should have proven published exposure to molecular techniques and experience in biotechnology particularly in relation to diarrhoeal disease. ***Desirable*** : Candidates with experience and original publication in the field of Diarrhoeal Diseases will be preferred. ***Job Requirements*** : To study the molecular aspects of microbiology of different enteric pathogens and parasites. The candidate should be familiar with techniques such as cloning, sequencing, various hybridoma techniques and other molecular tools as applicable to diarrhoeal pathogens.

(F) RAJENDRA MEMORIAL RESEARCH INSTITUTE OF MEDICAL SCIENCES, PATNA : (a) Asstt. Director (Three posts). *(Scale of pay of* Rs. 12000-375-16500)

(I) Asstt. Director (Epidemiology) : *Qualifications & Experience **Essential** :* MBBS. with 12 years research/teaching experience in the field of the communicable diseases or M.D. in Community Medicine/Public Health/Preventive and social Medicine with 10 years research/teaching experience in communicable diseases. ***Desirable*** : Work experience in epidemiological aspects of Kala-Azar ***Job Requirements*** : The incumbent is required to plan, carry out analysis and report, epidemiological research studies and control strategies in Leishmaniasis.
(II) Asstt. Director (Clinical Medicine) : *Qualifications & Experience : **Essential** :* MBBS with 12 years research/teaching experience in the field of parasitic diseases specially Kala-Azar or M.D. (Clinical Medicine) with 10 years research/teaching experience in treatment/management of patients and undertaking studies on Kala-Azar ***Job Requirements*** : To undertake hospital and field based clinical trials on anti-leishmanial drugs and clinical research on Kala-Azar patients. Management of O.P.D and Indoor patients at Instt. for Research and assist administration.
(III) Asstt. Director (Biochemistry) : *Qualifications & Experience **Essential** :* (a) MBBS or Ist class M.Sc. (Biochemistry) with 12 years research/teaching experience in the field of Biochemistry related to parasitic diseases OR M.D./Ph.D. in Biochemistry Degree with 10 years research/teaching experience in relevant fields. (b) Original work as evidence by publication in related subject. ***Desirable*** : Documented research (Published) work experience in Molecular Biology, Biochemistry like Isoenzyme studies RNA/DNA prob analysis, assay of anti-kala-azar drugs level in biological specimen, other bio-chemical tests etc. In visceral leishmaniasis or in other parasitic diseases. ***Job Requirements*** . The incumbent is required to pain, carry out research, analysis data, report biochemical research studies related to leishmaniasis plus any other duty assigned by the Director.

(b) Sr. Research Officer (Clinical Medicine) (One post) *(Scale of pay of* Rs. 10000-325-15200) *Qualifications & Experience : **Essential** :* (a) MBBS from a recognised University with 6 years research/teaching experience in the field of Parasitology preferably Kala-Azar/Clinical Medicine OR M.D. with two years research/teaching experience in the above field. ***Desirable*** : M.D. (Medicine or Paediatrics) with experience in undertaking clinical trial. ***Job Requirements*** : To design and conduct Clinical trials of anti leishmanial drugs in patient with Kala-azar and PKDL. To undertake patient care to run OPD and Indoor for treatment of Kala-azar patients.

(G) REGIONAL MEDICAL RESEARCH CENTRE FOR TRIBALS, JABALPUR : (a) Asstt. Director (Community Medicine) (One post). *(Scale of pay of* Rs. 12000-375-16500) *Qualifications & Experience : **Essential** :* MBBS with 12 years research/teaching experience in Community Medicine (10 years research/teaching experience for candidates possessing M.D. Community Medicine/Preventive & Social Medicine). Original work as evidenced by publications. ***Desirable*** : Post-Graduation in Community Medicine with experience of research in Tribal communities on communicable & non-communicable diseases. Experience of working on epidemiology of T.B., Malaria, Nutritional disorders & Haemoglobinopathies ***Job Requirements*** : To assist in planning and implementation of Community Medicine research with particular reference to health problems of tribals as also health and nutritional service, operational research, intervention studies, action oriented research and epidemological investigation of disease outbreaks. The job requires extensive touring in the tribal areas.

(b) Senior Research Officer (One post) *(Scale of pay of* Rs 10000-325-15200). *Qualifications & Experience : **Essential** :* MBBS with 6 years research/teaching experience in Microbiology (2 years in case of candidates possessing M.D./Ph D. in Microbiology). ***Desirable*** : MD/Ph.D. in Microbiology with experience in microbiological aspects of yaws sexually transmitted diseases, tuberculosis, diarrhoeal diseases, filariasis and other communicable diseases prevalent in tribal areas. ***Job Requirements*** : To participate in planning and implementation of research in the microbiology and related fields and the part of a multi-disciplinary team to investigate health issues of tribal population.

(H) INSTITUTE OF PATHOLOGY, NEW DELHI : Sr. Research Officer (One post). *(Scale of pay of* Rs. 10000-325-15200) *Qualifications & Experience : **Essential** :* (a) MBBS. (b) 6 years research/teaching experience in the field of Pathology (two years research/teaching experience for candidates possessing M.D. in Pathology/Ph.D). ***Desirable*** : The candidate should be interested in pursuing a research career. He/She should have a good academic background and experience in the use of special techniques such as immunohistochemistry, electron microscopy and/or tissue culture ***Job Requirements*** : The candidate will be required to actively participate in the ongoing research projects in the Institute. This is a middle level scientific post and the incumbent will be encouraged to develop his/her own research interests for future work. Work responsibilities will include histopathological and cytological reporting and general supervision of histopathology laboratory.

(I) NATIONAL INSTITUTE OF NUTRITION, HYDERABAD : (a) Asstt. Director (Two posts). *(Scale of pay of* Rs. 12000-375-16500)

(i) Asstt. Director (Moleuclar Biology) : *Qualifications & Experience : **Essential** :* First class M.Sc. in Biochemistry/Life Sciences with 12 years research/teaching experience in Molecular Biology (10 years in the case of candidates possessing Ph D.). Original research contribution as evidenced by publications. Candidates having research experience in Molecular Biology/Cancer/Toxicology/Cytogenetics will be preferred. ***Job Requirements :*** To assist in the investigations on the mechanism of cancer and development of Chemo-preventive agents and allied fields.

(ii) Asstt. Director (Food Toxicology) : *Qualifications & Experience* . ***Essential*** : (a) First class M.Sc. in Bio-chemistry/Toxicology/Life Sciences with 12 years research/teaching experience in Food Toxicology (10 years in case of candidates possessing Ph.D.). (b) Original work as evidenced by publiction in journals of international repute. ***Desirable*** ; Experience in analytical/immunological aspects of Food toxicants. ***Job Requirements :*** To assist in the analytical/toxico-logical investigations of environmental contaminants/adulterants of food and studies on foodborne diseases, Food Quality and Food Safety aspects.

(b) Sr. Research Officer (Three posts). *(Scale of pay of* Rs. 10000-325-15200)

(i) Sr. Research Officer (Extension & Training) : *Qualifications & Experience* . ***Essential*** : First Class Master's Degree in Life Science/Communication & Journalism with at least 6 years experience or Ph.D. (Life Sciences) with 2 years experience in writing/editing popular science articles in an established organization, newspaper or a publishing house. ***Desirable*** : Proficiency in English/Telugu/Hindi as evidenced by publictions. ***Job Requirements*** ; i) To edit periodicals/popular publications in nutrition and health related areas. ii) In addition, the incumbent is expected to carry out extension and training activities.

(ii) Sr. Research Officer (Programmer) : *Qualifications & Experience : **Essential** :* First class M.Sc. in Statistics/Mathematics/operational research or MCA or B.Tech in Computer Science PGDCA or equivalent from a recognised University with six years experience in developing of software and data processing using large database. Must be able to work on multi-platform environments, unix, Dos, Windows and Novel Netware (2 years in case of candidates possessing Ph.D. ***Job Requirements :*** The selected candidates should be able to prepare software for various scientific applications and assist Scientists in analysis of data on computer. The candidate should coordinate data entry and data analysis. The candidates also require to assist in Comuterisation of various scientific and adminstrative activities at the Institute.

(iii) Sr. Research Officer (Biochemistry) : *Qualifications & Experience : **Essential** :* First class M Sc. in Biochemistry with a minimum 6 years research/teaching experience in the area of lipid biochemistry/occular Biochemistry as evidenced by publications in reputed journals. (2 years in case of candidates possessing Ph.D.). ***Desirable*** : Post doctoral research experience in the area of lipoprotein metabolism/biochemical and molecular basis of atherosclerosis and thrombosis and/or experience in molecules mechanism in cataract research/diabetes. ***Job Requirements :*** To conduct laboratory research in the area of lipid biochemistry and biochemical and molecular aspects of atherosclerosis/thrombosis/diabetes. To study molecular mechanisms of cataract/diabetes.

(J) NATIONAL AIDS RESEARCH INSTITUTE, PUNE : Sr. Research Officer (One post). *(Scale of pay of* Rs. 10000-325-15200) *Qualifications & Experience* . ***Essential :*** M.Sc. Ist class in Biochemistry/Biotechnology/Microbiology/Life Sciences with 6 years research/teaching experience or Ph.D. with 2 years research/teaching experience in the field of molecular biology. ***Desirable*** : Experience in handling pathogenic organisms and Tissue culture. ***Job Requirements :*** Basic studies on HIV and sexually transmitted diseases pathogens. Development of molecular diagnostic reagents.

(K) TUBERCULOSIS RESEARCH CENTRE, (MADURAI TB UNIT) MADURAI : Sr. Research Officer (Clinic) (One post). *(Scale of pay of* Rs. 10000-325-15200) *Qualifications & Experience : **Essential** :* MBBS from a recognised University with six years research/teaching experience in Tuberculosis or any other relevant clinical subject. ***Desirable :*** M.D. in Medicine/Tuberculosis/Chest Diseases with two years research/teaching experience. ***Job Requirements :*** The incumbent will be required to participate in planning and conduct of controlled clinical studies in the management of different forms of tuberculosis and also in the Operational Research in Tuberculosis.

AGE : Below 50 years for the post of Dy. Director and **below 45 years** for the post of Asstt. Director and Sr. Research Officers. SC/ST/OBC candidates are allowed relaxation in accordance with Central Govt. Rules, in force.

Benefits of pension is admissible. Private practice is not allowed. But NPA as per rules of the Council is admissible only to those with medical degrees. Application forms and other information are obtainable from the **Office of the Director General Indian Council of Medical Research, Post Box No. 4911, Ansari Nagar, New Delhi-110029.** Forms duly completed should be sent to the **DG, ICMR, Ansari Nagar, New Delhi-110029**, with a crossed IPO for Rs. 8/- payable to **Director General, ICMR, New Delhi** (SC/ST candidates are exempted from this payment). Incomplete/late applications or without postal orders will not be entertained. Any convassing by or on behalf of the candidates or to bring political or other outside influence with regard to selection/recruitment shall be a disqualification.

NOTE : 1. Requirement of Ist class M.Sc. will be relaxable in appropriate cases of candidates who are possessing Ph.D. degree/equivalent degree in related subject 2. Candidates who have already applied for the post of Deputy Director, MRC, Delhi and Sr. Research Officer, TRC, Madurai in response to earlier advertisement (**May, 1998**) need not apply again. However, they may update their bio-data if there is any change.

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SPECIAL RECRUITMENT DRIVE FOR SCHEDULED CASTE AND SCHEDULED TRIBE CANDIDATES
(THIRD ATTEMPT)

Advt. No. IIFM/AMT/PSC-15/99

Indian Institute of Forest Management (IIFM) is a National Institute of autonomous character financed by Ministry of Environment & Forests, Govt. of India, to cater the training, education, research and consultation needs of the forestry and allied sectors in India. The Institute requires outstanding persons for appointment to the faculty with published works of high standards and an inclination towards orientation of their expertise in forest management. Institute also invites applications for filling up non-faculty positions of Research Associates and Assistant Librarian with good academic records.

A. **FACULTY POSITIONS :** No. of posts (3) Category SC-2 ST-1

Pay-scales: Rs. 3700-125-4950-150-5700 (to be revised)

Age : Below 45 years.

Assistant Professors in the areas of :

(1) Marketing Management

(2) Financial Management Accounting & Control

(3) Applied Computer Technology in the area of Operation Research/Data Base Systems (MIS)/Simulation modelling.

Essential Qualifications & Experience

Ph.D. with first class or equivalent (in terms of Grades etc.) at the preceding degree in the appropriate branch, with a very good academic record throughout and atleast three years teaching/research/forestry/industrial experience.

B. **RESEARCH ASSOCIATES :** No. of posts (2) Category SC-1 ST-1

Pay-scales : Rs. 8000-13,500 (Revised)

Age : Below 40 years.

(1) Research Associate, Financial Management Accounting & Control

(2) Research Associate, Applied Computer Technology and Quantitative Techniques in the area of MIS/RDBMS.

Qualifications & Experience

Post 1 : M.Com. with First Class with 3 years research/work experience. Weightage will be given to candidates with doctoral degree.

Post 2 : First class degree from a recognised University in any of the following areas :

B.Tech (Computer Science) or M.C.A. or M.Tech (Computer Science) or M.Tech (Remote Sensing & GIS) or PGDFM from IIFM with specialization or equivalent work experience in GIS and Remote Sensing with 3 years research/work experience.

C. **ASSISTANT LIBRARIAN :** No. of Posts (1) Category : SC-01

Pay Scale : Rs. 8000-13,500 (Revised)

Age : Below 40 years.

Qualifications and Experience

B.A./B.Com/B.Sc with M.Lib. Sc. or M.A./M.Com/M.Sc with B.Lib. Sc. 3/5 years relevant experience in the pay scale of Rs. 6500-10,500/Rs. 5500-9000 (Revised) in a large well established library in a research/training institution is essential. Persons with experience in documentation service and exposure to computer would be given preference.

Note : The Institute reserves the right to shortlist the candidates in any category (SC/ST) based on the applications received for various posts.

General : 1. Besides the pay & DA the employees would be entitled to other facilities as per Central Government norms/as per the rules framed for this purpose by the Institute from time to time. 2. Candidates should be below maximum age of 40/45 years as on 31.1.99. 3. Persons working in Govt./autonomous organizations/Public Sector undertakings should apply through proper channel. However, advance copy may be sent to the Institute. 4. Application enclosing the Curriculum Vitae duly signed and accompanied by a recent passport size photograph, and a non-refundable **Demand Draft for Rs. 200/-** should be sent by REGISTERED POST so as to reach the **Director, Indian Institute of Forest Management, Nehru Nagar, Bhopal-462003 latest by 8.2.99.** 5. Diploma in Forestry from Indian Forest College (now Indira Gandhi National Forest Academy, Dehradun) and PGDFM of IIFM will be treated equivalent to Post-Graduate Degree in Forestry/Forest Management. 6. Minimum requirement of qualifications and of experience will not be relaxed in any case. Persons who do not possess the minimum qualifications need not apply. 7. Institute has the right to fill/not to fill up the above posts. Only suitable candidates will be called for test/interview. 8. Only attested copies of certificates and proof of publications etc. be sent.

DIRECTOR

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